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REHABILITATION OF THE DEAF CHILD.*

DR. MAX A. GOLDSTEIN, St. Louis.

A solution of the problem of the physically handicapped child, his training and his rehabilitation, is now being submitted to the nation for a consideration as one of the most serious and vital factors encountered in the present era.

During the past five years, a careful survey was undertaken to determine the percentage of hearing normalcy in pupils of the public schools of the U.S.A. By means of the 4-A Audiometer, perfected by acoustic engineers, these tests were facilitated, and from 40 to 50 pupils in a classroom were simultaneously checked as to their hearing status. These surveys were made in New York, Philadelphia, Minneapolis, Chicago, New Orleans, Denver, San Francisco and other metropolitan centres, so that a cross-section might be obtained of the variations in environment, nationality and other factors useful in obtaining a general average.

Convincing and alarming statistics, collected by experienced observers, were the product of this general survey. In the 50.000,000 of school age enrolled in the public schools of the U.S.A., there were found to be:

40,000	Blind
60,000	Totally Deaf
80,000	Partial-Sighted
300,000	Crippled
3,000,000	Hard-of-Hearing
4,000 000	Defective in Speech

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a total of 7,480,000, or nearly 15 per cent of the entire school population, comprising the future citizens of the nation. This takes into account only the physically defective, as the mental defectives and other subnormal groups were not included in this survey.

Our function tonight is to discuss the hard-of-hearing child —nearly one-half of this entire quota.

Scientific and pedagogic organizations, social service and parent-teacher groups, educational and philanthropic foundations, the community, state and nation — all are equally and vitally interested, for it concerns national child welfare.

The formidable aspects of this problem are comparatively recent, and we have not yet realized its full significance, the seriousness of our responsibilities; nor have ways and means been devised to cope with it successfully.

To understand its significance and effect, its solution requires much publicity, educational propaganda, co-operation of all involved and interested groups, financial support, foundation grants, municipal, state and national legislation. It is as vital and important a problem as child labor legislation, unemployment aid, and old-age pension laws; but it is less understood, less developed and bears the significant label, "unpreparedness."

How shall we prepare to meet these issues as they pertain to the deaf and hard-of-hearing? The training of the deaf child is at best a difficult pedagogic task, but the gradual evolution of more efficient and effective forms of approach, progressive teaching methods, better qualification of teachers, co-operation of boards of education, more liberal financial support to carry on — all have helped to insure the deaf child better opportunities for scholarship, fluent speech and efficient lip-reading, so that he may compete with the normal-hearing in his aims for scholarship and citizenship on fairly even terms.

For the hard-of-hearing child, the teaching task is less difficult, for he has acquired speech as does the normal-hearing, even though such speech may have many imperfections. His greatest handicaps are in making contacts in and out of the school room, due to his defective hearing. For him lip-

reading accuracy and speech conservation are indispensable assets, and hearing aids are useful. When he has successfully acquired these accomplishments he is ready to compete with the normal-hearing.

Last summer, at the close of the school year, we had our first reunion of former pupils of Central Institute for the Deaf. Forty-five young men and women of this group, hailing from 20 different states, attended this reunion. They were such practical documents in evidence of successful rehabilitation that I had talking-movies made in our sound laboratories of the Institute, and I offer these now in evidence of actual accomplishment. They will tell their own stories in their own speech, and you, the interested audience, will be the judge of their actual rehabilitation.

(Demonstration with speech-movies.)

With this demonstration and this group I submit the evidence and the technique to make this emancipation from a serious physical handicap possible to this formidable 15 per cent of our entire school population.

4574 W. Papin Street.

HEARING AND ITS CONSERVATION IN THE SCHOOLS.*

WILLIAM E. GRADY, New York.

Father Knickerbocker has always dealt very liberally with his handicapped children in our school system. You may be interested to know that approximately $5,000,000 is carried in the 1937 budget for teachers' salaries, supplies and equipment for physically and mentally handicapped children. For example, we spend approximately $2,000,000 on the children of retarded mentality; $792,000 on open air classes; $666,000 on crippled children; $364,000 on children with impaired vision; $259,000 on cardiac children; $258,000 on homebound children; $203,000 on children with impaired hearing, and $143,000 on children with impaired speech.

Our interest in children with impaired hearing was largely a result of the pioneer work of Commissioner Frank Wilsey, former member of the Board of Education, and Dr. Gustave Straubenmüller, former Associate Superintendent of Schools. Both were instrumental in organizing our present School for the Deaf, located at 225 East 23rd street, Manhattan, of which Miss Carrie Kearns was the first principal; however, it was only when Works Progress Administration money became available that under the general supervision of the Board of Education and the said administration it was possible to organize a survey and give remedial treatment on a city-wide scale. Mr. George H. Chatfield, director of the Bureau of Attendance, and Mr. Daniel Caplin, Assistant Director of Health Education, assisted by Dr. Fowler, organized the work in January, 1934, with a personnel of approximately 200 people. Using the 4A audiometer for group testing, approximately 700,000 children have been tested in the public schools at all levels and in the parochial schools—a number in excess of the total population of the State of Rhode Island. The group testing was followed by individual testing with the 2A audiometer. There was a medical follow-up through home visitation and the cooperation of the family physician and

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local clinics was obtained in the carrying out of the otological recommendations.

Where the loss of hearing was 35 per cent or more between 6 and 8 years of age or where there was a loss of 50 per cent or more for older children, the pupils were recommended for admission to the School for the Deaf.

It is interesting to note that in the elementary schools the first survey showed impairments of approximately 3 per cent in connection with the left ear, 25,000 cases; in connection with the right ear 27,000 cases, and both ears 21,000 cases.

As a result of the conditions disclosed, teachers in the W.P.A. project were given instruction in lipreading and then assigned to the instruction of these children in the elementary, junior and senior high schools. The beneficial effects have been most marked, both as regards personality and achievement in school subjects.

Apart from such immediate results, the chief benefits derived from the project are the awareness on the part of the school system that the problem of the hard-of-hearing child exists and the recognition on the part of the parents that such defects exist in their children and that the facts should be frankly recognized and the aid of otologists and the school system enlisted in remedial programs. Moreover, through the cooperative attitude on the part of the family physician and the public clinics, much has been done to insure the solution of the problem of diagnosis and treatment.

An important question still awaits solution. After Federal money has ceased to be available, what residual service will there be in the school system unless budgetary provision be made in our normal budget. There is no assurance that this will be done unless we can crystallize community and professional opinion that the need must be met. We therefore appeal to the membership of this Section to reinforce our demands that, with the disappearance of Federal money, the inspectional and remedial service be maintained by the Board of Education through appropriation granted by the Board of Estimate.

I conclude as I began, namely, the work that has been accomplished and which means so much to the hard-of-hearing child has been possible only through the combined efforts of the Works Progress Administration, the Board of Education and the unceasing cooperation of Dr. Fowler and those associated with him in this field of work.

NATIONAL ORGANIZATIONS FOR SERVICE TO THE HARD-OF-HEARING: THE AMERICAN SOCIETY FOR THE HARD-OF-HEARING.*

BETTY C. WRIGHT, Washington, D. C.

I am grateful for the opportunity to present to you in brief form the service the American Society for the Hard-of-Hearing is rendering to hard-of-hearing adults and children. It has been rightly said that "service is a challenging word for a challenging need." The challenging need for the hard-of-hearing resulted in a unique type of social service — one developed *for* the hard-of-hearing *by* the hard-of-hearing and their friends.

A study of work for the hard-of-hearing will show that less than half a century ago those with failing ears were truly the forgotten ones. They were neglected, ridiculed and misunderstood. The need was great for some one to interpret their problems. The need for something to be done, a great service to be rendered, challenged the interest of a loyal group of hard-of-hearing workers here in New York. New York may rightly be termed "the cradle of the movement" for the hard-of-hearing.

Twenty-six years ago the New York League for the Hard-of-Hearing was organized. Other societies began to spring up until there were nine in 1919. It was in 1919 that the late Dr. Wendell C. Phillips, well known to this audience, founded the American Society for the Hard-of-Hearing. He realized that only by united action could better understanding be secured for hard-of-hearing children and adults. Today, due to organized work for the hard-of-hearing, there are 160 societies, and 100 of these are chapters of the American Society for the Hard-of-Hearing.

The purposes of our service organization are: "To serve as an information center on problems of defective hearing; to improve the educational, economic and social conditions among both adults and children; and to stimulate scientific

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efforts in the prevention of deafness and the conservation of hearing."

One of the major phases of our work is that dealing with the problem of the hard-of-hearing child. At our conference held in Boston last May a prominent educator said:

"Nothing is more important than to look after a lost child — lost in the mazes of his own bewildered life, spiritually, mentally, emotionally or physically. Each child has a right to have his talents and abilities developed to the greatest degree possible so that he may lay his own particular contribution upon the altar of life."

The American Society for the Hard-of-Hearing is championing the cause of the child lost in the mazes of impaired hearing. Our Committee on Hard-of-Hearing Children has had a vital part in arousing interest in the plight of the child with failing ears. It was through this committee that the best methods of testing the hearing of school children were investigated in 1925. The report of the committee hastened the development of the phonograph audiometer and gained the cooperation of the United States Bureau of Education. Statistics gathered for 1935-36 showed: One hundred cities reported 805,435 children tested; 44,983 were found to have impaired hearing; 22,216 were examined at ear clinics; 880 were restored to normal hearing; 13,930 are receiving lipreading instruction.

The American Society for the Hard-of-Hearing advocates an ideal program for the hearing child with a hearing impairment which will keep him in the school of normal environment. Such a program covers:

1. Prevention (medical) through hearing tests, otolaryngological examinations and treatments.

2. Education: *a.* Periodic instruction in lipreading in the regular schools for children who need this additional subject in order to keep up with their grades. *b.* Special classes in the regular schools for children with hearing losses too marked to profit by grade instruction unless aided by lipreading and hearing equipment.

Our program also stresses special training in speech and voice when necessary and urges vocational guidance for hard-

of-hearing children. The work for hard-of-hearing children of pre-school age is recognized as being of vital importance.

The American Society for the Hard-of-Hearing conducts a department for the isolated hard-of-hearing, known as the Everywhere League, a correspondence club. The members keep in touch with each other by means of ring letters. Our Department of Vocational Advice cooperates with the rehabilitation bureaus and has succeeded in getting retraining for many of its applicants. Our Committee on Legislation is striving for proper recognition of the rights of the hard-of-hearing child. Through our Department of Exhibits we are constantly reaching teachers, social workers and physicians, as well as the general public. Our official publication, "Hearing News," is sent out monthly to all members of the Society. From our headquarters in Washington, information is given on lipreading, hearing aids, work for hard-of-hearing children, and group work for adults with impaired hearing.

We record with gratitude the cooperation of the American Medical Association and allied associations of physicians. As a result of this cooperation the message of the American Society and its services has been broadcast all over the land and our office has answered all inquiries either by form letter or special letters.

The Society through its activities is constantly changing the attitudes of the family physician, grade teachers, parents and otologists towards the hard-of-hearing. More and more interest is being shown in the problems of those with deficient hearing and we believe that with united action there will be a better understanding of the hard-of-hearing adult in the social and economic world. We believe, too, that humanitarians will regard every boy and girl as did Whitman:

> "Each of us inevitable,
> Each of us limitless,
> Each of us with his or her right upon the earth."

SERVICE IN THE NEW YORK CITY SCHOOL FOR THE DEAF.

DR. JAY D. WHITHAM, New York.

The education of all atypical or handicapped children in New York City public schools is under the direction of Associate Superintendent Margaret J. McCooey. An idea of the magnitude of this work may be gained by the following table:

REGISTER OF ATYPICAL CHILDREN FOR MARCH, 1934.

	Number of Pupils	Number of Classes
Mentally handicapped	9672	471
Physically handicapped		
Crippled	2266	104
Cardiopathic	1239	54
Open-air	4659	192
Hospital	552	2
Tuberculosis	552	23
Home-bound	761	112
Blind	78	6
Deaf	500	43
Behavior problem	1153	58
	21,432	1,065

Miss McCooey has recently reported that there are 27,000 children in the city who are being given instruction in speech correction, and 6,000 receiving instruction in lip-reading. After an extensive study of the hearing of the school population of London, England, Kerridge reported that 0.1 per cent are deaf enough to require special education. Applying this ratio to New York City, we find that there are about 1,000 such children who must be cared for.

There are obvious advantages in having these children live in their own homes and spend part of each day in contact with normal children, instead of living in institutions away from their homes and parents. To meet this problem, P. S. 47 School for the Deaf was started in 1908 with 47 pupils.

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Today it has 493 pupils and is the largest day-school for the deaf in the United States. This school, located on East 23rd street, is a regular part of the public school system of New York City, and is the only public day-school for the deaf in the city. Its aims are fourfold:

1. To provide a specific and a general education to pupils who have a hearing loss sufficient to prevent normal progress in a regular school.

2. To relieve teachers and classes in regular public schools of the burden and retarding effect of such pupils.

3. To restore to society useful, intelligent men and women.

4. To train teachers for such highly specialized work.

The school is provided with a large, modern hotel-type kitchen, cafeteria, outdoor and indoor playgrounds, an assembly room seating 500 people, large printing, woodwork and sign painting shops, also facilities for teaching sewing, flower making, millinery and lamp shade work. In addition, there is a model apartment where the girls receive instruction in home-making and cooking.

There are 44 regular classes, each consisting of from six to 12 children, and each class with a separate teacher. The teachers are adequately trained to perform the patient and difficult work required in carrying the children from the kindergarten through junior high school. Hot lunches are provided the students, and five large motor buses are used to carry the younger children to and from school from nearly every section of the city. In addition to the regular scholastic teaching, each child is being constantly instructed in lip-reading and speech training. Attention is given to group auditory education by amplification of speech and music.

Before I assumed the duties of aurist for the school last year, the work was capably done for 20 years by Dr. George B. McAuliffe. I have been greatly helped by his detailed histories and functional tests made on several thousand children. Dr. McAuliffe deserves great praise for the painstaking work he did for so long without compensation.

My office at the school consists of three large rooms well equipped for examining and giving routine treatment. There is a capable nurse, and I am greatly helped by Miss Kauffman, the Principal, and Miss McLaughlin, the Assistant Principal,

who is always present when I examine the children. Each child is given a careful ear, nose and throat examination yearly. Children are brought to my office in the school from various parts of the city for decision as to their eligibility for admission to the school. Some are sent as a result of hearing loss detected in the annual group testing made of every school child, some are sent by teachers, and some by physicians. A few who come have no hearing defect, some are mentally deficient, and many have a slight hearing defect. Children who have a 50 per cent loss in hearing are recommended for admission to the school. If a child has been having difficulty in his studies in a regular school and has a hearing loss of 35 per cent, I have been recommending admission to the school. Before admission an intelligence test, a Wassermann test, and a general physical examination are prescribed. A careful history is taken as to familial deafness, consanguinity, history of miscarriages, syphilis, the age deafness was noted, the opinion of the attending physician, and other facts of interest.

I am conducting a careful examination of every pupil and by next year will have a complete record of every child in the school. I have found that 18 per cent, or 100 pupils, are in need of ear treatment, 30 per cent of the children have usable residual hearing in the speech-sound range of sufficient degree to be helped by sound amplification. Very deaf children are helped through hearing in two ways. First, they are enabled to hear what is said to them, and secondly, their speech is improved and made more intelligible. Correct speech requires pitch, rhythm and intensity and can never be properly acquired or retained unless it is heard by the ear. About 70 per cent of the children in our school cannot be helped by sound amplification, but they become skillful lip-readers and many of them go through high school and college with honors.

The printing, millinery and dressmaking trades attract most of our graduates, and these young people seem to have less difficulty in securing positions than do normal young people.

In a very careful examination made of 125 of the older pupils, statistics as to the cause of deafness have been collected.

Deaf-mutism, hereditary	61	
Cause not definite	10	
Cause definite	54	
Meningitis	16	
Convulsions	1	
Premature birth	1	
Otitis media, non-suppurative	2	Measles
Otitis media, suppurative	18	Scarlet fever
Trauma	2	Other
Hereditary syphilis	5	
Mumps	1	
Encephalitis lethargica	1	(parents cousins)
Endocrine (cretin)	1	
Operation for cervical glands	1	
Otosclerosis	5	

Of the cases showing hereditary nerve deafness, 30 gave a definite family history of nerve deafness and the remainder denied it. Unquestionably, many denials were the result of ignorance or evasion; three of the five cases of otosclerosis showed a family history of deafness, and two of the cases of suppurative otitis did likewise. Consanguinity was present in six cases of the deaf mutes, and in one case a family history of both deafness and consanguinity was present. In one very pathetic family that I observed, the father, mother and five children are all deaf. I wish to mention the cases of three sets of twins, all suffering with advanced nerve deafness. In one set of identical twins the twin paternal aunts were congenital deaf mutes; in another the deafness was attributed to scarlet fever which affected both children at the age of 9 months. Congenital deaf-mutism is usually characterized by an intact vestibular apparatus and almost identical audiograms in the two ears. It would seem that nearly all deafness, whether congenital or acquired, is the result of toxic damage to inferior ear organs, which makes apparent the inherited deafness or impaired hearing potentialities.

Regardless of the character of the deafness, the marriage of a deaf person results in a proportion of deaf children of 8.6 per cent. When the parents are deaf-mutes the proportion may be as high as 30 per cent.

The value of the work at the School for the Deaf is attested by the fact that in the last five years 80 per cent of our graduates have entered higher schools.

ORGANIZATIONS FOR SERVICE TO THE HARD-OF-HEARING: NEW YORK LEAGUE FOR THE HARD-OF-HEARING.*

ANNETTA W. PECK, New York.

The New York Section of Otolaryngology is doubtlessly familiar with the fact that the New York League for the Hard-of-Hearing is Chapter One of the American Society for the Hard-of-Hearing; that it is the pioneer organization in this field of social work for the hard-of-hearing, and that it commenced to do this work exactly 26 years ago this month. We enjoyed in the early days the interest and good will of several members of the Section, notably Dr. Delavan and Dr. Rae; and as the years went on that interest has developed into a cooperation which has been a matter of pride to all of us. The League's officers and social workers have appeared on a number of your programs, and the developing cooperation has recently assumed the gratifying form of an arrangement whereby the current chairman of this Section is a member of the League's directorate during his year of office. The present chairman, Dr. Fowler, has long been associated with us, so that it seemed natural enough that he should have said to me some time ago that he wished, in holding this meeting, to clarify several points; and with this in mind he invited Miss Wright and myself to state afresh, in the light of recent progress, what national social work is being done for the hard-of-hearing, and what are your own New York City resources, embodied by the League, for the practical cooperation in the local field.

Every member of this Section knows the League in a general way — that it has employment and vocational services; that it promotes lipreading and does a vast amount of educational work; that otologists may send hard-of-hearing children to its demonstration school; that it has an unbiased hearing aid service and that under certain circumstances free hearing aids

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are to be obtained from it; that it has helpful recreations; and that it may be relied upon to help the hard-of-hearing and their friends to solve the problems characteristic of our handicap. You are aware, probably, that the great national interest in the hard-of-hearing child was appropriately initiated and developed amongst us. You are also acquainted with our information service and I believe that you understand that we do not work with the deaf. There is still a good deal of confusion on this latter point, and in order to clarify it we do not use D-E-A-F in our work at all. But familiar as you may be with the list of our services, isn't the Section inclined to think of the League as a social agency for the underprivileged only? The League took its original stand on the fact that need for readjustment to our handicap is universal, so that it could not function for any class exclusively.

A while ago I happened to meet in person a member of this Section who is also a League member. He said: "I cannot send my hard-of-hearing patients to you; they are not the kind of people who would ever need the League. I can't ask them to join it because you have nothing to offer them." To such fortunate people — who seem to have no hearing problems — we offer them one of the greatest things in the world, the right to give. We hard-of-hearing people are for the most part shut out from the exercise of this right, but we can, if we will, recognize that we have a sacred obligation to give aid and comfort to one another as exemplified in such an instrument of genuine civic service as the New York League for the Hard-of-Hearing.

But let me cite instances: A wealthy woman who uses the League as her outlet for giving, as well as for her own hearing problems, recently asked us to help her about her son, a brilliant young physician, whose impaired hearing has already forced him to give up his practice and take up another line of medical work. The advice required was not only information but planning a better life and a more hopeful future for a valuable human being. Next, the mother of a hard-of-hearing child in a private school: her otologist had sent her to find out about lipreading instruction. When she saw a notice at the League begging for small contributions to our present legislation fund — you probably know that we are working to have lipreading made available for every child in this state who needs it — she gave a generous contribution,

saying, "Do keep this up until you get lipreading into the private schools, too!" Third, a distinguished lawyer, prominent in musical affairs, who brought his own daughter for advice about a hearing aid. Father and daughter, both hard-of-hearing, observed and commented upon all they saw, and having received far more than they asked, faded out of the picture apparently forever. Fourth, the family physician who has taken care of five generations of my own family has the habit of sending us any patient or friend who has a hearing problem. The other day he sent us a colleague whose practice was being seriously interfered with by his increasing loss of hearing. A genial soul, with long experience in medicine, he, too, received a better interpretation of his problem and practical advice which we hope will keep him in active medical work. Last, a Judge of the Court of Appeals, who knew what he wanted and since he had been a League member for years, decided that we could help him find the answer to his problem; we could and we did. All of our services are free, both to the underprivileged public as well as to the fortunate and privileged. To each we offer gifts after His will — advice, information, constructive help, and the all-inclusive opportunity which we call the right to give —"bread, kingdoms, stars, and sky that holds them all."

So we invite you to make a greater use of the League, and to visit and observe us even as otologists from Italy, South America and the Pacific islands — even as educators from South Africa, Yugoslavia and China have done. If you do not understand us — if you hear strange and puzzling accounts of us — there is the telephone at your elbow and we are at the other end of the wire, happy to make explanations. Have faith in our ability to think of ways to cooperate with you in special problems. If you wish to send a patient for any of our services, call the League and talk over the case with one of our social workers; she will report back to you later. We especially beg that you will remember that appointments should be made for hearing aid interviews. I recall that a doctor once said to a patient, "Go to the League and they will give you a fine hearing aid free." The man arrived expecting that someone would pick up a little wonder-working machine and put it into his hands and that he could go right out of the door able to hear ever after. He found that there were people ahead of him, all just as eager as he for a hearing aid inter-

view, and that he would have to have an appointment so that it could be determined just which aid suited his individual ear. This was bad enough, but when he discovered that he had to make written application for the grant of a hearing aid from our Stein Fund, he was bewildered and he was cross. It was hard for him to understand that the Stein Fund is like any other Foundation; it has a limited income, and it has certain rules and regulations covering its gifts. Even normally hearing people have to have such things explained to them.

I have said a good deal about ways in which the League can be of greater service to the members of this Section, but before my five minutes are up I wish to plead for your greater help to the League and I am sure that you will wish to give it before you have come to the end of this program. Indeed we need the Section of Otolaryngology; we need you to help in forming certain policies through a real consensus of opinion; we need you to act as a sort of Court of Appeals on certain medico-social questions; we need you to help our board of directors, a body composed of business men, lawyers and other occupations, as well as several doctors, to interpret the League to that portion of the general public with which you come in contact. We also are working for good health; we also have high ethical standards and we also abhor commercialism. We feel ourselves honored by your generous approval and cooperation in the past, and we hope, in the performance of the great work for human betterment which we have undertaken, to deserve your cooperation in the future.

480 Lexington Avenue.

FUNDAMENTALS OF LIP-READING. INCLUDING DEMONSTRATIONS WITH THE AUDIENCE AS SUBJECTS.*

ESTELLE E. SAMUELSON, New York.

It is fitting and proper at a meeting, discussing the care and training of the deaf and the hard-of-hearing child, to consider for a moment the most vital and real compensatory factor in low hearing acuity.

To us, the hard-of-hearing, lip-reading is a tangible, concrete and genuine possession. The degree of lip-reading ability which each one of us acquires is commensurate with certain innate qualities of mind and the extent to which these qualities can be strengthened through exercise and training. Our efforts at learning lip-reading bring with them poise, self-reliance and a sense of self-sufficiency so important in adjusting to our handicap.

Now for the fundamentals from the lip-reading teacher's point of view. We know that it takes a thirteenth of a second to articulate a speech element, which means that speech is rapid; that the speech patterns vary with every mouth, that about 50 per cent of the speech elements are either obscure or invisible, that there is no difference in visibility between a vocal and nonvocal sound and that about 40 per cent of the speech elements are homophenous — that is, look alike — and yet it is possible to learn lip-reading.

The fundamentals of lip-reading are concisely stated in the popular definition given to us by the great authority, the late Edward B. Nitchie: "Lip-reading is the art of understanding a speaker's thought by watching the movements of his mouth."

We have then three definite objectives: *1.* To help our student master an art. *2.* To teach him to grasp thought, exercising the psychological powers of thinking synthetically,

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intuitively, quickly, with alertness and concentration. *3.* Training the eye to see speech patterns as they are revealed by the organs of speech. There is a scientific basis of the theory of movements which the teacher imparts to the student following sound pedagogical principles. In some methods of teaching lip-reading the student learns the movements by practice under careful guidance, while in other methods he is made conscious of the kinesthetic, eye and mind training processes. For example, he may be taught that *th,* as in *thumb,* is a tongue to teeth movement and the short *u* in the same word a downward jaw movement and the *b* a lip shut movement. The teacher gives him practice on this movement in words, sentences and stories until their recognition becomes subconscious. She teaches him that he does not have to see each element, each syllable, each word; that lip-reading is thought grasping. For example, let us take this sentence (without voice): "We are having warm weather today." If you have lip-read this sentence it is no doubt because you understood "warm weather." Perhaps you have not understood the sentence. I am not going to help you by slow word for word deliberate articulation or exaggerated speech. I am not going to shout at you. Let us try again. "We are having very warm weather. This is the warmest winter we have had in five years. It was very cold yesterday. We are having very warm weather." I have expressed the same thought in other words and through contrasting thought and have worked back to the original, always remembering how much is or is not visible, and that lip-reading is the art of understanding thought.

In concluding this brief superficial discussion, it should be mentioned that lip-reading for the deaf is a substitute for hearing. For the hard-of-hearing child and adult and the normally hearing person, it is a supplement, the mental and physical eye supplying what the ears do not hear; further, in teaching the hard-of-hearing and the normal-hearing, we take for granted a foundation of language and speech. The majority of lip-reading teachers use voice in their lessons.

To impart the fundamentals of teaching lip-reading to prospective teachers, we require from 60 to 120 clock hours of study.

PARENT AND TEACHER TRAINING.*

IRENE B. YOUNG, Tenafly, N. J.

I come before you as a nursery school teacher to talk with you about the training of the very young child who is discovered to have impaired hearing. Some of you are aware of the problems which arise when the parents first discover that their child has such a handicap. Many times the reaction is highly emotional, but it is always a tremendous shock when one must face a rather staggering and unfamiliar situation. Sometimes you minimize the difficulty — after all, there has been so little that could be done; sometimes you preach fortitude; if the child is approaching school age you suggest school.

Now let us see what we really want for these little children, the children from babyhood to the age of 6 years.

First, we want parents who can meet this problem with intelligence and understanding. We want a home life and a family group which will provide a little better than average background for this little child. There must be no emotional strain, no recrimination, petting or spoiling; the child must be taught to do things for himself; there must be a beginning in use of speech and lip-reading. Now, if this problem faced you in your own home, could you solve it?

There is another suggestion: To place the child in school. But where are the schools? Two or three here; a dozen, perhaps, to serve the whole country. Must the child then wait until he is 6 years old or more and lose all those precious years when normal-hearing children are acquiring so much knowledge, so much facility in social experience and the technique of getting along with people? We hope this will not long be the case. We hope that this great new movement for nursery school education will help to solve this problem for handicapped children. We need nursery schools and we need teachers.

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What can the nursery school do?

It can take these little children, no more than babies sometimes, into pleasant homelike surroundings, into a little group of children, many of them perfectly normal, all of them from the near neighborhood; the child will be given opportunity for childlike activity, surrounded by the simple speech of normal children, guided through the greater difficulties by an understanding teacher, helped to better ways of getting along with people. Sometimes the parents are there to help. They come for conferences, of course. But they also come for participation. Not only are they told what to do, but they are given opportunity to do it.

Very often in the first weeks the parent is too emotional to be permitted to observe or assist in the group where her child is taught. She is told frankly that the mothers will "exchange" children because that will be more helpful; that she will regularly observe and assist another child than her own. As her interest broadens to include this other child she finds her interest in the group growing, and is enabled to come into it and to assist without any distracting emotions, bringing all the intelligence she has to bear upon the problem of training. (I have referred to the mother, but we are happy to have the fathers too, and we do have them.)

There are some of you, particularly the otologists, who will want to know more particularly what we can do about speech, lip-reading, acoustic training. And even in this the parents take an increasing responsibility. Above all, the nursery school provides the opportunity to preserve any speech or language the child already has, acquired either before deafness came on, or through his imperfect hearing. He is encouraged to attend to sounds within his hearing range and every opportunity is used to let him hear speech and musical sound. Speech is taught when none exists; voice is trained and pronunciation perfected where speech has been acquired imperfectly through imitation of sounds imperfectly heard.

Why, then, have we brought this problem to you tonight? Because there is no group anywhere so able to forward this work. Do more than report these children. Know the schools, work with the teachers, follow the children whom you find, and know the full measure of joy in their progress and success.

THE ROLE OF THE DEAF-PREVENTION CLINIC.*

DR. WESTLEY M. HUNT, New York.

It was stated at the recent meeting of the American Academy of Ophthalmology and Otolaryngology, held in this city, that 100,000 persons in the United States had been born deaf, and that 10,000,000 had become deafened. If this estimate is even approximately correct, it is a sad commentary on preventive medicine. In this enlightened age, when preventive medicine is our watchword, that there are 10,000,000 deafened who might have been in some degree helped, places a real problem before us.

It is not a credit to our state or national government, to organized medicine, to organized charity, nor a credit to us as otolaryngologists that there are as yet so few clinics in operation for the prevention of deafness. We have in our hospitals most efficient otological clinics which on the whole are devoted to the treatment of acute ear conditions and already existing deafness. They are overcrowded and seldom present the atmosphere which encourages attendance except for acute conditions. The psychology is seldom such that a mother will seek advice for the prevention of deafness.

You have only to talk with the hard-of-hearing as a group to realize how hopeless is their affliction as far as a cure is concerned. You have only to talk with honest otologists to learn how little they can do to actually restore useful hearing to the already deafened.

It is perhaps due more to the initiative of the deafened themselves that their problem is more and more being placed before us. Witness this meeting tonight. The American Federation of Organizations for the Hard-of-Hearing repeatedly appeals to us through the local chapters represented in New York by the New York League for the Hard-of-Hearing to develop clinics which will treat deafness at its beginning rather than after its development. They have been greatly

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responsible for the passing of state laws in New York and Minnesota requiring the testing of hearing of public school children. These are the only two states to pass such laws. They have helped to pass the law in New York requiring the reporting of the deafened. They are advocating with some success the introduction of lip-reading in the public schools. They are now demanding of us prevention clinics, and quite rightly.

Many have dreamed, few have awakened. Many have had visions, few have gone to work.

In a most delightful address delivered nearly 10 years ago in St. Louis, Dr. Ross Faulkner painted a beautiful picture of his dream of the establishment of institutes in centres of population which would be manned by the best of physicians, adequately endowed, equipped with X-ray and laboratory facilities, which would be devoted to prophylaxis of deafness alone. He said, "Although preventive measures are least appreciated, because when most effective they are not seen to be necessary, yet it should take very little logic to convince people that conservation of human faculties is more important than forests or mines or any material thing, and still more economically profitable." Dr. Faulkner's dream is still our star in the east. Dr. Edmund Prince Fowler and others have in a smaller way put this dream into operation.

May we work and hope for the establishment of many small preventive clinics in the schools, working with a neighboring hospital otological clinic. Printed information could be given the children and the parents, telling them what causes poor hearing, the signs of impaired hearing, what the neglect of slight ear troubles may cause, and how to seek help. Such folders are already prepared by the New York League for the Hard-of-Hearing. More persons should be educated in the detection of symptoms. This applies as well to the physicians in the clinic as to the parents. Dr. Fowler has recently tabulated these, as well as much other valuable information, in a paper entitled, "Ear Conditions from the Preventive Standpoint," which is published by the Academy. It is most instructive, both to the physician and the layman.

The psychology of the clinic must be one that encourages parents to seek the preservation of their child's hearing. There must be a social service which appreciates that no

matter how good the advice given, good results cannot be obtained if the child has to go home to poor living quarters, poor food and unintelligent parents. The history must be most complete to discover whether a beginning deafness is inherited, congenital, acquired, and how acquired. The clinic must have facilities for doing a Wassermann on all cases, an X-ray of the sinuses and ears when indicated, arrangements for the removal of infected adenoids and tonsils, as well as general ear surgery.

As Dr. Fowler has indicated, the preventive clinic must think of the child from the standpoint of heredity, sex, age, environment, climate, social condition, health, habits, idiosyncrasy for or against poisons and drugs, irritations and infections, immunity and reaction thereto, the digestive tract, blood, bones, glands, endocrines, vasomotor mechanisms, nervous and psychological reactions. The hearing must be tested by an audiometer. Advice must be given after a diagnosis has been made in relation to hygiene, prophylaxis, diet, clothing, care of the nose and throat, regulation of home conditions, the dangers of swimming and of contaminated swimming facilities, and, of course, the carrying out of any necessary surgical procedures.

The examining otologist should consider all children with a hearing loss of 6-9 sensation units as needing otological care. He must realize that syphilis may still be considered the cause of any disease until proved otherwise; that not all cases of otosclerosis are deaf; that even though otosclerosis be present, deafness may be due largely to definitely preventible lesions occurring at the same time; and that there are too many false diagnoses of otosclerosis made.

The greatest hope we have in prevention of deafness is the prevention of ear involvement from infection, be it from scarlet fever, measles, sinusitis, infected tonsils and adenoids, or direct entrance of infection from contaminated water. These all lead to middle ear infection of a greater or lesser degree of severity with resulting damage to the hearing. The nerve deafness type from mumps, metallic poisoning, drug poisoning and inheritance will still tax our patience.

The running ear is the great offender and needs all the judgment of a good otologist to decide on the necessity of early drainage, his skill in establishing it, and, above all, his

judgment of a good otologist to decide on the necessity of preservation of hearing. The old teaching that a discharging ear of two weeks' duration which does not show signs of resolution should have a mastoidectomy to preserve hearing is still a good rule to follow. If the ear becomes chronic only poor results can be promised for useful hearing.

Until such time as organized medicine can see that an ounce of prevention is worth a pound of cure — until such time as there shall be established many clinics devoted solely to the prevention of deafness in the young — I can only ask you as otolaryngologists to cooperate in your own clinics in this simple but constructive work.

The great national campaign against syphilis is on. Would that somewhere in this great expenditure of public moneys some scheme could be worked out so that clinics for the prevention of deafness could really function; that parents might be educated to seek early help and diagnosis, and the physician encouraged to give more willingly of his time and care. The time may not be far distant when the state and national government may tell us, as physicians, how and when this work will be done. May we be ready and understanding. We have only ourselves to blame if we are caught off guard.

Dr. Wendell Phillips once said: "It is our privilege to envision the goal, even though we may never be permitted to behold it with the eye; but it is our sacred duty to make sure that those who follow us will be enabled to witness its full fruition."

In the words of John Ruskin, "When we build let us think we build forever. Let it not be for present delight nor for present use alone. Let it be such work as our descendants shall thank us for and let us think as we lay stone on stone that a time is to come when these stones will be held sacred because our hands have touched them, and that men will say as they look upon the labor and wrought substance of them—

" 'See — this our fathers did for us'."

33 East 68th Street.

THERAPEUTICS IN OTOLARYNGOLOGY.

DR. JOHN H. CHILDREY, San Francisco.

Proper treatment of infections in the ear, nose and throat presupposes a correct diagnosis. Nervous conditions, such as neuroses and migraine, and less common infections, such as erysipelas and those caused by the tubercle bacillus, spirocheta pallida and fungi, should not produce diagnostic difficulties if the physician is constantly alert. The securing of a detailed history, frequent use of laboratory aids, and resort to consultation prevent many errors. It is probably easier to avoid errors in group practice than in private practice. When malignancy is suspected, a biopsy is as essential as a culture of the throat in suspected diphtheria or as a leukocyte count in agranulocytic angina.

In ear, nose and throat practice the aim of treatment is the maintenance of a high immunity and the elimination of infection or irritants. Because certain anatomic and physiologic factors limit the number of valuable therapeutic measures, it is possible that treatment is overdone.

General and local immunity to infection is undermined by malnutrition, fatigue, poor ventilation, chilling and by obstruction to drainage. Chilling, by producing vasoconstriction, lowers the resistance to bacteria or virus. Respiratory infections prevail in variable climates and among certain groups of persons who are "cold susceptible." Air conditioning may partially counteract the climatic factor, but it is an expensive process. The cold susceptibles must avoid contact with infected persons and should avoid cold sleeping rooms, cold showers and improper exposure to the elements.

A correct diet protects one against infection and hastens recovery from it. Jarvis[1] found that an absence of fat in the diet of young individuals tends to increase the lymphoid tissue in the throat. A lack of raw fruits and vegetables increases the mucous discharge from the nose and sinuses. Vitamin A, the best source of which is fish liver oils, by maintaining the

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integrity of the mucous epithelium, increases the resistance to upper respiratory infection. Vitamin D, found in fish liver oils and, in small amounts, in sea foods and egg yolk, aids in the absorption of calcium and phosphorous, important in cases of malnutrition.

A cold is a virus disease, but the proper antivirus has not yet been discovered. Meanwhile, stock respiratory bacterial vaccines are being used to lessen the severity of complications of colds. Specific autogenous vaccines and nonbacterial proteins, such as milk and leukocytic extract, are useful in chronic low grade infections.

Allergy often is confused with infection. The treatment of each condition is different. In vasomotor rhinitis, in which edema of the tissues is present, calcium has been beneficial. It is given conveniently as dicalcium phosphate with viosterol. An apparent benefit resulting from ingestion of acids may be the result of improved digestion. Sansum[2] has found that the digestion can be improved by giving sour fruit juices, pickles and panteric capsules instead of the mineral acids. It is doubtful whether zinc ionization is superior to the simpler measures of applications of 10 to 50 per cent silver nitrate to the sphenopalatine ganglia or of pure phenol to the nasal mucous membrane.

There is sometimes noted in women, especially during the menopause, a congestive type of hyperesthetic rhinitis which may be benefited by ovarian extract.

In cases of bleeding, hemostasis is not always obtained by injections of whole blood, horse serum, thromboplastin or fibrogen. It is best procured by pressure or by ligation of bleeding vessels. Calcium and iron are beneficial. The latter, a necessary constituent of hemoglobin, is given as iron and sodium citrate, 20-40 gr. daily, or the syrup of ferric iodide, min. 5-10, t.i.d., a.c. Transfusion of whole blood may be necessary in severe bleeding and in sepsis. If the dilated veins of Kiesselbach's area on the nasal septum tend to bleed obstinately, one can obliterate them by the actual cautery, by strong (25-50 per cent) solutions of silver nitrate, or by trichloracetic acid.

The most effective topical anesthetic continues to be a solution of cocain hydrochloride, but this may produce alarming

symptoms of toxicity, especially in young people. Various less toxic, but less efficient, substitutes are available and merit further use. They do not seem to vary greatly in structure. Barbital and its many derivatives are physiologic antidotes for cocain poisoning and they are valuable in producing a desirable quieting effect before operations under local anesthetics.

Adrenalin, in 1:100 solution, sprayed in the nose or throat, has been found most useful in asthma and, in 1:1000 solution, on a cotton tampon for bleeding. In nasal surgery, it can be combined with various local anesthetics to prolong their action and to produce vasoconstriction.

Nose: In infections of the nose and sinuses, the defense mechanism should not be disturbed. This consists of the ciliary activity of the mucous membrane and the mucinous layer which overlies the ciliated epithelium.

The ciliary activity is lessened by the use of water, adrenalin, silver nitrate — in even as weak a solution as .50 per cent — and by the trauma of too vigorous packing and washing. The nasopharynx is also lined with ciliated mucous membrane and should be treated with care for this reason. In the presence of infection, it is unwise to probe or inflate the Eustachian tube, and it is even dangerous for the patient to blow his nose because of the possibility of a complicating otitis media.

The acutely swollen nasal mucous membrane makes a patient extremely miserable. An isotonic saline solution, containing .25 to .50 per cent cocain and 1 per cent ephedrin, used as a spray, is effective in providing aeration and relieving congestion. Substitutes for cocain are useful and if the obstruction is not too marked, ephedrin alone is sufficient.

Further treatment of acute rhinitis and sinusitis consists in isolation of the patient when it is feasible and rest in bed where there is a moist, even temperature (70° F.). The cold virus probably is destroyed by heat, which, used generally and locally, seems helpful. Hot baths (either of the whole body or of the feet only), hot drinks and an electric light bulb baker are useful. Occasionally, antipyretic drugs are necessary for relief of distressing symptoms. Fluids should be given freely. Disease results in a loss of alkali and increased

production of acid. Testing the reaction of the urine is a satisfactory gauge, and sodium bicarbonate and fruit juices are used to keep up the alkaline reserve. Laxatives are required if the bowels are sluggish. Analgesics, such as Dover's powders, copavin and the salicylates, are usually necessary. Salicylates are irritating to mucous membranes, unless given with alkalis.

Nonirritating, nontoxic bactericidal agents for the nose and nasopharynx consist of 10 per cent neosilvol, 10 to 25 per cent argyrol, and the newer mercurials, merthiolate and metaphen. The two last mentioned remedies usually are combined with ephedrin. In acute rhinitis, argyrol, applied on a small cotton pledget, will increase the flow of mucus, thus producing a physiologic washing of the membrane. It does not produce the desired rhinorrhea when it is combined with ephedrin.

In the purulent stage of rhinitis and sinusitis, local medication has a limited use. The removal of stagnant secretions is desirable and is done by gentle suction with cannula or glass suction tip or the pus-filled sinus may be irrigated with normal saline solution. Only when the infection has failed to respond to such treatment is surgery indicated. Even surgery need not be radical; for example, an antrostomy, properly made, will remain open and will result in the cure of most maxillary sinus infections.

In cases of severe atrophic rhinitis with fetor and crusts, nasal douches are not advisable, because they remove the thin mucinous layer which is very scanty in these cases. An efficient and stimulating cleanser is a 25 per cent solution of dextrose in glycerin, applied daily on a cotton-wrapped applicator. For less marked atrophic rhinitis, use a light mineral or vegetable oil spray.

In nasal vestibulitis, a mild ointment, as 1:5000 merthiolate, is beneficial. Plucking the vibrissae is prohibited. Erysipelas may start in these infections and must be watched for.

Infections of the upper lip, tip of nose and inner canthus are frequently staphylococcic. They usually subside after the use of hot moist compresses of epsom salts and exposure to infra-red rays. The former treatment is preferable. Surgery is contraindicated because of the danger of serious compli-

cations; namely, sepsis, cavernous sinus thrombosis, or meningitis.

Throat: It is probable that most acute infections of the throat are caused by the streptococcus. The treatment of acute infection of tonsil or pharynx is largely a matter of intensive general measures, but local treatment aids in bacterial destruction and results in symptomatic relief. Sulfonamide given intramuscularly and orally has been found to be beneficial in other streptococcic infections and seems to be useful in acute streptococcic infections of the throat. Bismuth and sodium tartrate in 1.5 per cent solution, intramuscularly, has been recommended. Caustic drugs are contraindicated. Frequent (hourly) hot irrigations of the throat with salt and soda, 2 drams of each to a quart of hot water, are beneficial. The heat is of primary importance.

Soothing antiseptics for local use are Mandl's solution and 5 per cent guiacol in glycerin. Aspirin, used as a gargle, in powder form or in chewing gum, is also soothing. Severe pain may necessitate the use of benzoic acid compounds. At times, a large inflamed tonsil may simulate quinsy.

In acute laryngitis, the same general measures employed in cases of colds are helpful. Complete rest of the voice is advisable. Steam inhalations, plain or with compound tincture of benzoin, 1 dram to one pint of water, are given continuously. Hot applications over the larynx, hot drinks and a cough sedative are used. For adults, give codein, gr. $\frac{1}{8}$ to 1 dram of various syrups. For children, use syrup or paregoric. Ipecac may be helpful for laryngeal spasm in children to induce vomiting. It is not advisable to swab the larynx. One cc. of 1:1000 adrenalin solution may be instilled into it. Should asphyxia be imminent, a low tracheotomy is preferable to intubation, because the former lessens the possibility of traumatizing the vocal cords.

Granular pharyngitis, usually chronic, is characterized by hypertrophy of the lymphoid tissue of the posterior wall of the pharynx and particularly that of the lateral bands adjacent to the posterior faucial pillars. The pharynx presents a rough, red appearance. This condition is helped by iodides, which are given in lipoiodin tablets, one to six daily; in syrup of hydriotic acid, or as potassium iodide. The last named rem-

edy has long been used with benefit for infections caused by fungi.

Smokers' throat, with irritation and cough, is relieved by glycerine troches and abstinence, if possible, from smoking. Menthol in cigarettes, rather than being beneficial, is probably mildly irritating, as it has been found to be irritating when used in the nose.

In chronic laryngitis, it has been customary to use 1 per cent menthol, or 3 per cent creosote in olive oil instilled into the larynx, but the value of these remedies is doubtful.

In recent years, severe pyorrhea or Vincent's infection seems to be less common than it was in former years. Since the organisms are anerobic, sodium perborate is used on the toothbrush or mixed with saliva as a gargling paste or mouth wash. Three per cent peroxide of hydrogen is another valuable oxidizing mouth wash, and soda is recommended to counteract the acidity. In a severe Vincent's infection, neoarsphenamine may be used intravenously.

Acute thrush infections respond readily to applications of 2 per cent crystal violet in 50 per cent alcohol and to sodium perborate.

Ear: For eczema of the ear or its canal, at times obstinate, the use of water or peroxide is prohibited, and the weeping area is painted with 2 to 10 per cent silver nitrate. Various ointments are beneficial, notably tar ointment, 3 per cent ichthyol in zinc oxide ointment, or 2 per cent thymol in various mercury ointments. The question of allergy sometimes must be considered.

The above mentioned ointments are usually effective for the itching of external otitis, unless this is associated with seborrheic dermatitis, when the infection of the ear is prone to recur unless the scalp is also attended to.

Impacted wax may be associated with external otitis and should be removed gently or washed out. A preliminary softening of the wax with sodium bicarbonate, glycerin or peroxide may be necessary.

Furuncles frequently result when the patient has been digging at his ear or scratching it. They respond to hot applications, incision seldom being necessary. Five per cent phenol

in glycerin, warmed and instilled into the ear, is soothing, but a more potent analgesic may be needed for the pain. When the boil drains, the canal must be kept clean in order to prevent reinfection. For this purpose, use aqueous or alcoholic merthiolate solutions.

In every middle ear infection there is at least initial involvement of the mastoid. A myringotomy may be the best part of conservative management and adequate care of the middle ear has aborted many a mastoid. Careless handling of an otitis media, on the contrary, may prolong the infection and aid its spread.

The application of heat and the instillation of warm 5 per cent phenol in glycerin are used for acute earache. Some prefer 10 per cent menthol in oil as an analgesic. If opiates are necessary, a myringotomy usually is indicated. Many chronic middle ear infections subside under careful treatment. Granulations or polypi must be removed. A solution of equal parts of peroxide and alcohol is a useful cleansing agent. Antiseptics may consist of iodine and boric acid powder or 2 per cent thymol in alcoholic merthiolate solution but are worthless unless they reach the intratympanic infection.

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Greens' Eye Hospital.

PULMONARY METASTASES OCCURRING FROM ABERRANT MIXED SALIVARY GLAND TUMORS. REPORT OF THREE CASES AND DISCUSSION.

DR. GEORGE W. OLSON, Fresno, Cal.

The purpose of this paper is to present three case reports of mixed salivary gland tumors. These cases are of interest not only because of the pulmonary metastases, but also because they were consecutive cases of this type of neoplasm seen in the Department of Otology of the University of Michigan Hospital.

The literature pertaining to this subject reveals but four proven cases of pulmonary metastases (Griffin and Trombetti,[1] Jouliard,[2] Partsch[3] and Brunschwig[4]). There are also mentioned five additional cases in which pulmonary or internal metastases were suspected, but in none of these cases were definite proofs rendered (Wood,[5] Judd,[6] New[7] and McFarlane[8]). The general impression gained from a review of the literature pertaining to the mixed salivary gland tumors is that malignant degeneration occurs in a varying proportion of cases (0-45 per cent); that if malignancy does intervene, it is almost always locally invasive and destructive; and, that distant metastases are rare (Patey,[9], Sonnenschein,[10] Chen and Louchs,[11] Wilson and Willis,[12] Speese,[13] Benedict and Meigs,[14] Grove[15] and Hutchinson[16]). This is also in accord with the majority of the pathology textbooks.

REPORT OF CASES.

Case 1: O. W., a white American female, age 49 years, was admitted Jan. 4, 1932. Her chief complaint was a painful lump on the inside of the mouth.

The patient stated that a similar lump had appeared on the right jaw in February, 1923. This lump was incised twice for relief of pain. On Dec. 25, 1923, she noticed "rolls" around the mass. This caused her alarm, so she entered the Mayo Clinic, where she underwent an operation on Dec. 31.

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(A letter from the Mayo Clinic stated that the patient had had a tumor of the right palate and upper jaw posteriorly. This mass had been excised with the cutting cautery and the base destroyed. The microscopic section of the tissue revealed carcinoma of the mixed tumor type.) Following this procedure, she received three courses of radium therapy. The patient remained free from recurrences until November, 1931, at which time a sore spot occurred on the inside of the right upper jaw. About Dec. 15, 1931, a lump appeared in this sore spot. On admission she stated that this mass was rapidly growing.

Examination revealed the defect caused by the previous operation. In this operative area there was a round, firm tumor the size of a hickory nut. The palate had been pushed

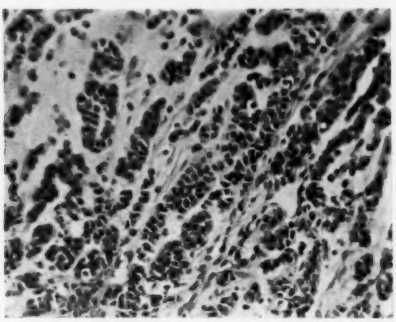

Fig. 1. Showing carcinomatous change in mixed tumor (about 360 x magnification).

down medially and anteriorly. On anterior rhinoscopy it was noted that the nasal septum was pushed to the left by the right lateral wall of the nose. Both antrums were found to be hazy when transilluminated, and Roentgen studies showed infiltration of the soft tissues in the operated area. A biopsy specimen was removed and it was reported as being a mixed salivary gland tumor which had taken on some malignant characteristics (see Fig. 1).

The decision as to the treatment was delayed pending examination of the tissue removed at the previous operation. When the patient returned on Jan. 25, 1932, it was found

that the tumor had pushed the palate still farther downwards. Because of this increased activity the tumor was considered inoperable, and a series of high voltage Roentgen ray treatments were administered. The tumor mass gradually receded, until in December, 1932, it was found that the growth again showed increased activity, as evidenced by depression of the palate and greater obstruction in the right nares.

It was felt that Roentgen ray treatment alone was not satisfactory, so operative intervention was done on Dec. 28, 1932, by Dr. J. H. Maxwell. At this time the right antrum was exenterated, together with a large portion of the hard palate,

Fig. 2. Showing masses in both lung fields.

and a radium capsule was placed in the operative site. The patient was discharged on Jan. 28, 1933, in good condition. She returned at frequent intervals for checkup and at none of these times were local recurrences found. However, on Jan. 8, 1934, the patient returned complaining of pains in the back and abdomen of five weeks' duration. Physical examination failed to find the cause of this pain. It was felt that Roentgen studies of the spine and colon were indicated, and during these procedures peculiar changes were noticed in the thoracic cavity. Chest Roentgenograms were then taken, which revealed strong evidence of pulmonary metastases (see Fig. 2).

It was the opinion of the Roentgenologist that further therapy was not indicated and as there was no need of immediate palliative treatment, the patient was discharged.

The patient returned to the hospital but two times more, on Feb. 25, 1934, and April 10, 1934, and on each visit she complained of increasing pains in the back and chest. She accepted with equanimity the hopeless prognosis given her and tried to go on with her usual routine of work. She gradually lost weight and strength until on Jan. 11, 1935, she became bedridden, where she remained until her death on Jan. 3, 1937.

She and her family had previously agreed to a postmortem examination, and this was performed at her home by

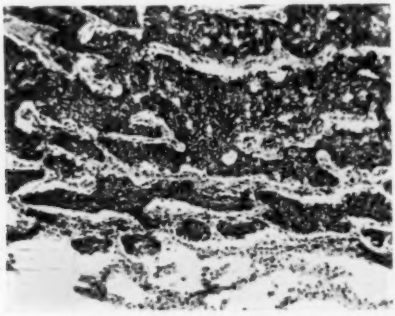

Fig. 3. Showing edge of portion of carcinoma in pulmonary tissue.

Dr. Arnold Combs and Dr. Thurston Thieme. The summary of the autopsy protocol is as follows:

"Complete replacement of the right lung and four-fifths replacement of left lung by metastatic adenocarcinoma. Metastases in bronchial and mediastinal lymphnodes, pleura, spleen and liver. Cachexia. Subepicardial fatty infiltration. Myocardial hypertrophy and brown atrophy. Endocardial sclerosis and fibrosis of the valve cusps. Old myocardial infarct scar. Terminal right sided cardiac dilatation and relative tricuspid insufficiency. Aortic atherosclerosis. Arterial sclerotic nephropathy. Fatty and fibrous atrophy of a persistent hyperplastic thymus. Hypothyroidism. Petechial hemorrhage in mucosa of gastrointestinal tract. Fatty

atrophy of pancreas. Chronic cystitis. Passive congestion and parenchymatous degeneration of all organs." The microscopic note is added by Dr. C. V. Weller, Professor of Pathology at the University of Michigan, that "the neoplasm is composed of nests of small deep blue-staining cells, resembling basal cells, with some palisading around the cell nests. Also there is extensive necrosis of the cell masses, giving an adenomatous appearance. The carcinoma has resemblances to the pseudo-adenomatous basal cell carcinoma and also the adamantinomas" (see Fig. 3).

Case 2: A. R., a white American male, age 48 years, entered the University of Michigan Ear, Nose and Throat Clinic on May 29, 1933, and stated that his chief complaint was a

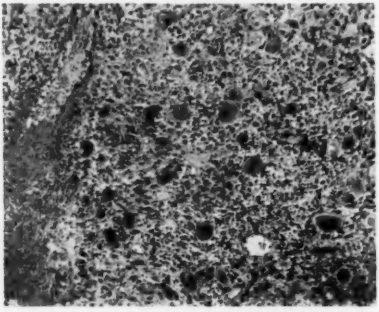

Fig. 4. Photomicrograph of first biopsy specimen. Note many multinucleated giant cells.

tumor mass in the throat. His illness began about March 29, 1933, with soreness of the right side of the throat, which gradually became more severe. On April 1, 1933, he noticed a lump in this sore area, and he said that this mass was growing rapidly and causing difficulty in the act of swallowing.

Examination revealed an ulcerative mass the size of a small hen's egg in the region of the right tonsil and soft palate which pushed the uvula to the left. This tumor was firm, somewhat nodular and gave one the impression that it was encapsulated. The tissue procured on biopsy revealed a large number of multinucleated giant cells. It was the opinion of the pathologist that if the neoplasm was connected

with the periosteum or the bone that it might be diagnosed as a cellular form of a giant-cell tumor (see Fig. 4).

A second biopsy specimen was procured, and the tissue was essentially the same. Roentgen studies of the region about the tumor showed no pathological bone changes.

On June 1, 1933, the tumor was removed by Dr. A. C. Furstenberg. He found that the mass was completely encapsulated, was easily enucleated, and that there were no signs of adherence to bone or periosteum. Pathological study of the removed tumor showed that the tissue contained scattered structures with an epithelial lining, and that although the major portion of the tumor was composed of giant cells,

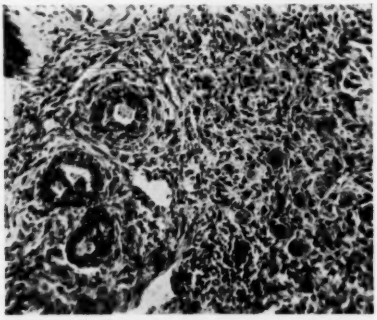

Fig. 5. Photomicrograph of tissue removed at operation. Note multinucleated giant cells and epithelial structures.

the neoplasm belonged in the group of mixed salivary gland tumors (see Fig. 5).

The patient was discharged on June 6, 1933, in excellent condition.

He returned on July 14, 1933, at which time there was a recurrence in the region of the right tonsillar fossa the size of an English walnut. A second operation was performed and the tumor was again found to be encapsulated, although this time a definite connection with the periosteum of the mandible was found. Actual cautery was used to destroy this area. Two weeks following this procedure, 400 mg. hours of radium were supplied to the lesion by means of a capsule.

No recurrences were noted until Jan. 9, 1934, when the patient returned complaining of pain in the right jaw. It was found that he had a mild trismus, and that small masses were noticeable in the base of the tonsillar fossa and in the right lateral lymphoid band. Tissue removed from these areas showed the same type of neoplasm as had previously been reported. Roentgen studies of the chest revealed evidence of pulmonary metastases (see Fig. 6).

Further treatment was contra-indicated after the pulmonary findings and hence the patient was discharged. He returned on several occasions, and although the local and

Fig. 6. Note tumor mass in right lower lung field.

metastatic lesions were becoming larger, pulmonary symptoms were absent. A letter was received from his wife stating that he had passed away on July 20, 1934.

Case 3: This patient was on the service of Dr. H. W. Jacox, and it is with his permission that this case is reported.

M. L., white, American male, age 59 years, was admitted to the hospital, Feb. 20, 1930, for a cataract operation. Physical examination showed a tumor below the right jaw the size of a walnut, which was firm, smooth and immobile. The patient stated that this swelling had been present for 23 years and that it was only slowly increasing in size.

Two years later, Feb. 15, 1932, the patient again entered the hospital for a similar operation upon the other eye. It was found that the tumor below the jaw was then noticeably larger than on the previous admission. The patient stated that he had noticed that the mass had grown more rapidly since August, 1931. The removal of the tumor was advised and this procedure was carried out in Toledo. The pathologist reported that the tissue represented a myxochondroma of the salivary gland.

The patient was subsequently referred to Dr. H. W. Jacox on July 20, 1932, for high voltage therapy. Following this

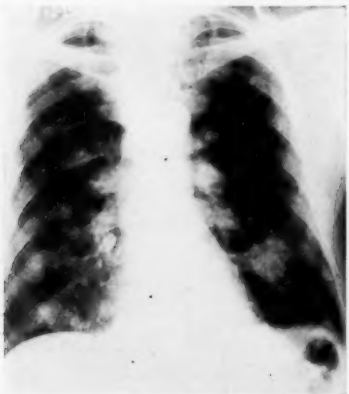

Fig. 7. Chest Roentgenogram showing sternal tumor and widespread pulmonary metastases.

treatment he was discharged with instructions to report back in two months for additional therapy. However, he did not return until Feb. 21, 1933, at which time it was noted that there were several hard masses in the right cervical region. Additional courses of Roentgen ray treatments were given at this time and again on March 3, 1933.

The patient returned Sept. 20, 1933, and stated that a mass had appeared on his chest about June 20, 1933, which was rapidly growing. This tumor was found to be on the sternum, the size of an orange, firm and immobile. A Roentgenogram was ordered to show the nature of the lesion and the films showed a metastatic lesion on the sternum and a disseminated pulmonary metastatic lesion (see Fig. 7).

The chest and the primary region were treated with further high voltage therapy. On Dec. 5, 1933, the mass on the sternum was found to be 20 per cent smaller, but there was an increase in size of all the pulmonary lesions.

The patient was last seen on Feb. 14, 1934, at which time the sternal tumor had decreased 80 per cent in size. There was also an intraoral appearance of a tumor on the alveolar margin of the horizontal ramus of the right mandible. A biopsy specimen reveled that this tissue was a carcinoma which showed the mucoid change and the peculiar resemblance to endothelium found in the salivary gland tumors (see Fig. 8).

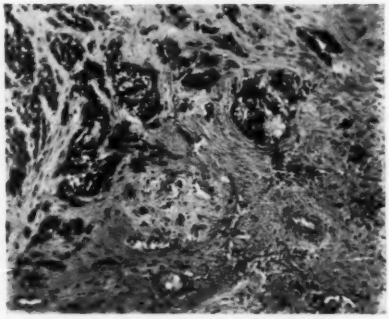

Fig. 8. Photomicrograph of biopsy specimen showing mucoid appearance of carcinoma cells.

It is realized that from the academic standpoint, several important facts are absent. The sternal tumor was not biopsied because it was feared that the wound closure would be difficult, as the skin was so very tightly stretched. A careful physical examination revealed no evidence of a second neoplastic primary growth which might account for the pulmonary metastases.

DISCUSSION.

These case reports are presented to refute the thought that distant metastases from the mixed salivary gland tumors are rare. In the light of these three cases it seems logical to assume that such an occurrence may be more common than is generally supposed.

It is known that pulmonary metastases may give rise to few or no symptoms, and it is possible that many such instances are being overlooked. In two of our cases having Roentgen evidence of pulmonary metastases, the chest findings on physical examination were normal.

A number of men have noted while studying the postoperative courses of large series of mixed tumor cases that many of the patients die at home of pulmonary tuberculosis. In view of the fact that a differential diagnosis might be difficult to make in the home without laboratory aids, may it not be construed that some of these patients died, instead, of pulmonary metastases?

The method of determining the presence and the degree of malignant change in this group of tumors appears to be somewhat difficult. At first the microscopical section alone was studied, and later, the duration and the rate of growth were taken into consideration, *i.e.*, generally speaking, the more rapid the growth-rate, the more malignant the tumor. It is generally conceded that mixed salivary gland tumors can undergo carcinomatous and sarcomatous degeneration, so it is altogether reasonable that these malignancies send out distant metastases. It is a routine procedure in most hospitals to obtain chest Roentgenograms in cases of malignancy about the head or neck. It seems inconsistent not to use the same routine in mixed tumor cases of the salivary gland type.

In summarizing, it is felt that neither the clinician nor the pathologist can satisfactorily determine the degree of malignancy in many cases, and that the Roentgenologist should be summoned. It is not advocated that the latter could exclude the possibility of distant metastases, but in a few cases the Roentgen findings of metastases in the chest or bones would preclude operation, and in all cases a more accurate prognosis could be given.

CONCLUSIONS.

1. The occurrence of pulmonary metastases from tumors of the mixed salivary group are not rare as is evidenced by the above report of three consecutive cases.

2. **The clinical and pathological study of these tumors is of little prognostic value because the degree of malignancy cannot be accurately determined.**

3. **Routine Roentgen studies of the chest should be obtained before therapeutic measures are undertaken.**

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CLINICAL EXPERIENCE OF A CORRESPONDENCE STUDY GROUP WITH SUPRARENAL CONCENTRATE IN OTOLARYNGOLOGY.*

DR. D. C. JARVIS, Barre, Vt.

At the 1931 meeting of the American Medical Association, held in Philadelphia, I suggested to three nationally known medical friends that a four-cornered group correspondence be started in order to discuss the relation of biochemistry to clinical conditions of the body. This suggestion followed a statement by one of the four, to which the other three agreed, that the next step in medicine would probably be a better understanding of the biochemistry of the body and its relations to clinical conditions.

With the passing of time letters exchanged were shown to medical friends which brought a request that they might join this correspondence group. As these requests multiplied I was obliged to limit the group to 50, as this number represented all that I could conveniently handle. Letters are sent out to group members on Monday, Wednesday and Friday of each week, 52 weeks in the year. Each letter contains four postographed pages representing duplicates of letters received from group members, together with my reply as coordinator of the correspondence. The group will soon be starting its seventh year. That which I wish to present at this time relating to suprarenal concentrate represents the combined experience of this group, together with my own experience.

Group members in applying biochemistry to various clinical conditions became interested in several different approaches. One of the group members, Dr. Francis B. Blackmar, of Columbus, Ga., devoted considerable time to the autonomic nervous system approach, presenting to the group his observations, that when the sympathetic division is dominant a definite syndrome, clinical data and clinical conditions may

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be expected to be present. When the parasympathetic division is dominant it also is characterized by its own syndrome, clinical data and clinical conditions.

While pursuing this approach he developed, in August, 1932, a kitchen laboratory method of making suprarenal concentrate.

PREPARATION OF SUPRARENAL CONCENTRATE.

Whole fresh suprarenal glands are obtained from the butcher. As promptly as possible all adherent nonglandular tissue is trimmed off and the glands are ground under normal saline, made just acid to blue litmus with hydrochloric acid. This mixture is agitated with a perforated dasher until most of the white connective tissue has been removed by adhering to the dasher. Then the mixture is strained through muslin which removes all large particles. The result is a thin purple colored liquid. This is an extract of the whole gland and contains prohibitive quantities of medullary secretion of oral administration. This medullary secretion is removed by salting out at the isoelectric point with ammonium sulphate. At this stage there is a clear, water-like fluid and a purple floating scum. The clear fluid contains the medullary secretion and is discarded. This residue still retains its purple color. It is mixed with powdered glucose and the resulting liquid is taken in the form of drops.

Group members desiring to use suprarenal concentrate, this formula was turned over to Armour and Co., who desiccated the paste and filled 2 gr. capsules with it. At first there were some unpleasant experiences, due to traces of medullary secretion still present, but this was soon corrected. It was feared that there might be a loss of potency, but this fear does not now seem justified.

Dose: Suprarenal concentrate is at present only available in 2 gr. capsules. The dose varies, but as a rule one or two capsules after meals is sufficient. In a few patients less than one capsule has been necessary, due to the occurrence of abdominal distress.

Group experience has shown that the best plan is to prescribe one 2 gr. capsule the first day, two capsules the second and three capsules the third day, in this way building up to

dosage. This plan will avoid any laxative action of the preparation. Request the patient to swallow the capsules with food at meal time. Use the smallest possible daily dose that will produce results.

CASE REPORTS BY GROUP MEMBERS.

Case 1: The first patient for whom suprarenal concentrate capsules were prescribed was a female, age 55 years, who had a typically wet, pale edematous nasal mucous membrane. Her blood pressure was 142/92, pulse 65 and her basal metabolism a —5. She had vague but constant neuralgia-like pains throughout her entire body. She had frequent attacks of urticaria and marked angioneurotic edema, especially of the face. She was constantly tired, slept poorly and had no appetite. Scratch skin tests to the various food and inhalant allergens were negative. She had been treated with dilute hydrochloric acid, thyroid extract and ammonium chloride, all with no improvement. Aug. 15, 1935: Suprarenal concentrate capsules, two, three times daily, were prescribed. After the first dose her response was immediate. She felt a decided sense of well-being, her angioneurotic edema entirely disappeared and she volunteered the information that she had a sense of warmth that she had not experienced for years. She further stated that she felt that her system had rid itself of a great quantity of water. There is no change in the color of her nasal mucous membrane, though it is not so wet or boggy as before.

Case 2: Female patient, similar to Case 1, except that in 1921 a right Sluder, high cribriform, ethmoid sphenoid operation was performed to relieve a typical sphenopalatine ganglion lower half headache, which was followed by relief for many years. She returned in October, 1935, complaining of sick headache with nausea and excessive intestinal rumbling. She had a pale, thick, wet mucous membrane, markedly alkaline urine and blood pressure 108/80. Dilute hydrochloric acid and an acid ash diet gave her considerable relief for some weeks, after which her symptoms returned in spite of an increased dose of the acid and attempt by elimination diet to relieve her. Two gr. capsules of suprarenal concentrate one t.i.d. were prescribed. The next day she volunteered that she felt better then she had for a long time, there being no headache, less subjective coldness and her nasal mucous

membrane decidedly more pink. She continues to feel greatly relieved.

Case 3: Female, age 56 years, with a pale, wet mucous membrane. Left frontal headache, mucous colitis with constipation. Oct. 5, 1935, prescribed suprarenal concentrate capsules, 2 gr., one capsule four times a day. On Oct. 11, she was seen again and felt better than she had felt for a number of months. She felt warmer, has less cough when lying down and had a sense of well-being. In the above three patients there were no eosinophils.

Case 4: Female patient diagnosed as hyperthyroidism because her basal metabolism was up and she had exophthalmus. The thyroid was removed and basal metabolism when tested was found to be normal. She was given one 2 gr. suprarenal concentrate capsule three times a day and the metabolism rose to +36, but the weakness of which she had complained still continued. She spent most of her days in bed. She was advised to take the juice of one lemon three times a day after meals, plus one suprarenal concentrate capsule three times a day, because it has been found that lemon juice holds the metabolism down. At her next visit her metabolism was —22. She reported she had taken only two lemons a day. She was told to continue two lemons a day, plus two suprarenal concentrate capsules three times a day. She reported at the next office visit that she had gone to a party for the first time in years and slept all night. Today (Oct. 7, 1935) her metabolism is still —21, but she feels stronger for the first time in years and is much improved over her condition at the last visit. She is now approaching normal strength. The above visits were at intervals of one week each, from Sept. 4, 1935, to Oct. 7, 1935.

Case 5: Diagnosis: Hay fever with ragweed chief offender: maxillary sinusitis. No pollen treatment given. Suprarenal concentrate, 2 gr. capsules, started Aug. 22, 1935. After a week's medication patient received noticeable relief from symptoms and remained so as long as capsules were taken.

Case 6: Diagnosis: Allergic coryza. No pollen treatment given. Suprarenal concentrate started Aug. 22, 1935. Symptoms entirely relieved in two days and continued so until Sept. 2, when no further medication was given, and did not need it for balance of season. On Oct. 20, this patient devel-

oped acute rhinitis, and suprarenal concentrate capsules one t.i.d. were prescribed. After two days of medication patient states head noticeably clearer and discharge decreased.

Case 7: Diagnosis: Hay fever with ragweed a 4+ offender. No pollen treatment. Suprarenal concentrate started on Aug. 23, 1935. Noticeable relief from sneezing and nasal secretion decreased as long as capsules were taken.

Case 8: Diagnosis: Hay fever. No pollen treatment. Suprarenal concentrate on Aug. 23, 1935. Immediate relief from symptoms second day after beginning capsules and continued so for the balance of the season.

Case 9: Diagnosis: Hay fever with ragweed chief offender. Suprarenal concentrate capsules started on Aug. 22, 1935. Relief in two days from symptoms. On Aug. 30 stopped capsules for two days and symptoms returned. Capsules started again and continued until season was over. No further trouble.

Case 10: Diagnosis: Hay fever. Pollen treatment given but without favorable reaction. Suprarenal concentrate started Aug. 24, 1935. Patient secured relief from symptoms in a few days and continued so for the balance of the season.

Case 11: Diagnosis: Hay fever. No pollen extract given. Suprarenal concentrate started Aug. 24, 1935. Relief from symptoms after one week's medication. No further symptoms as long as capsules were taken.

Case 12: Diagnosis: Hay fever. No pollen extract given. Suprarenal concentrate started Aug. 24, 1935. Symptoms relieved considerably after two days' medication. Capsules taken for balance of season and patient was very comfortable.

Case 13: Diagnosis: Hay fever with sagebrush chief offender. No pollen extract given. This patient had taken pollen extract for a number of years with only a small amount of relief. Symptoms were relieved in four days after suprarenal concentrate was given on Aug. 22, 1935. Progress during balance of season was very satisfactory.

Case 14: Diagnosis: Hay fever. Maxillary sinusitis. Suprarenal concentrate was given on Aug. 22, 1935. Hay fever symptoms greatly relieved after a week's medication. Discharge from sinuses was noticeably lessened.

Case 15: Diagnosis: Double maxillary sinusitis. Hay fever. On Aug. 26, 1935, suprarenal concentrate was given. Relief from symptoms two days after starting capsules. This patient came to Denver from Kansas because of the severity of his hay fever. Had sneezing and coryza even after arriving here but after taking suprarenal concentrate was entirely relieved as long as capsules were taken.

Case 16: Diagnosis: Acute double maxillary sinusitis. Allergic coryza. Suprarenal concentrate started Aug. 27, 1935. Sneezing and nasal discharge decreased after three days' medication. Patient states that hay fever season of this year was the most comfortable he had ever experienced.

Case 17: Diagnosis: Hay fever with chronic catarrhal otitis media. Suprarenal concentrate given Aug. 28, 1935. Improvement after two days of medication and continued so for the balance of the season. The condition of the ears was noticeably improved while capsules were taken.

Case 18: Diagnosis: Hay fever with ragweed sole offender. This patient took pollen extract and had comparative relief. Advised suprarenal concentrate on Aug. 30, 1935, to control burning of eyes and itching of nose. Had relief in two days and continued so as long as capsules were taken.

Case 19: Diagnosis: Hay fever. This patient had a very severe hay fever attack and when first seen on Aug. 30, 1935, had not slept for a week. Advised suprarenal concentrate two capsules t.i.d. and in four days had relief from nasal stoppage. Was able to sleep the full night. This patient remained comfortable as long as capsules were taken.

Case 20: Diagnosis: Hay fever. This patient came from Kansas City, Mo., to Denver for relief from hay fever. Symptoms were lessened while in Denver, but was still suffering from sneezing and coryza. Advised suprarenal concentrate and after a week patient was able to return to Kansas City on Sept. 4, 1935, and he notified me that he was very comfortable for the balance of season.

Case 21: Diagnosis: Acute maxillary sinusitis. Advised suprarenal concentrate on Sept. 16, 1935. After three days' medication amount of discharge materially decreased and turbinates noticeably shrunken. Continued capsules for a week and sinusitis was greatly improved.

Case 22: Diagnosis: Chronic pansinusitis. Advised suprarenal concentrate on Sept. 18, 1935, and have continued the medication until Nov. 15. There has been considerable improvement. Catarrhal discharge lessened and patient has been free from colds so far this season.

Case 23: Diagnosis: Bronchial asthma. Chronic maxillary sinusitis. Prescribed suprarenal concentrate on Oct. 26, 1935. Patient at that time was having a severe attack of bronchial asthma. After suprarenal concentrate was taken for three days the asthma was considerably relieved. I have supplied this patient with capsules to last 60 days. There is considerable improvement in the sinusitis as well as the asthma.

We, as a group, have learned that each section of the United States has its own problems and a treatment regimen successful in New England, for example, has often to be modified in order to be successful in some other section of the country. The first three case reports were from New York State. The fourth was from Georgia. Cases 5 to 23 were from Colorado. The following case reports are from Alabama. You will observe that in the south it is necessary to increase the chloride content of the body and add an acid, either organic or inorganic, when food is taken. In Case 4, citric acid, in the form of lemon juice, was added, while in following cases dilute hydrochloric acid was the therapeutic agent often used to secure the acid and chloride desired:

Case 24: Sept. 23, 1935: Female, age 52 years. History: Hay fever four weeks. First year. Examination: Mucous membrane —2. All turbinates pale, swollen. Treatment: Acid ash food. Dilute HCL gtt. xx t.i.d., one suprarenal concentrate 2 gr. capsule t.i.d., Sept. 25, 1935., comfortable. Remained so.

Case 25: Sept. 20, 1935: Female, age 43 years. History: Sneezes, nasal obstruction. Same symptoms periodically for years. Examination: Mucous membrane —3, pale. Polyps on both sides. Treatment: Acid ash food, dilute HCL gtt. xx t.i.d. One suprarenal concentrate capsule 2 gr. t.i.d. Reduced water intake. Oct. 11, mucous membrane pale pink. Entirely comfortable, polyps still present.

Case 26: Sept. 26, 1935: Female. History: Cold six weeks. Sneezes, eyes itch. Examination: Mucous membrane —1,

pale. All turbinates pale, swollen. Diagnosis: Hay fever. Treatment: Acid ash food, dilute HCL gtt. xx t.i.d. One suprarenal concentrate 2 gr. capsule t.i.d., Oct. 21. Did not return until this date because of complete relief in one week.

Case 27: Aug. 27, 1935: Female, age 60 years. History: Hay fever many years. Last year was controlled by homiodin. Treatment: Acid ash food, dilute HCL gtt. xx t.i.d. One suprarenal concentrate 2 gr. capsule t.i.d. Aug. 21, greatly relieved. Sept. 21, reported over phone completely comfortable. No return of hay fever.

Case 28: Oct. 5, 1935: Dr. C. H. F., age 34 years. History: Hay fever 10 days. First year, but has stuffy nose all year and sneezes great deal. Examination: Mucous membrane — 1, pale. Septum deviated to left. Blood pressure 134/95. Treatment: Acid ash food, dilute HCL gtt. t.i.d. One suprarenal concentrate 2 gr. capsule t.i.d. Oct. 19, mucous membrane pale pink. Symptoms relieved. Blood pressure same as first. Nov. 23, blood pressure 125/80.

Case 29: Sept. 15, 1935: Male, age 50 years. History: Hay fever six years. One month late this year. Present attack 10 days' duration. Examination: Mucous membrane — 2, pale. Septum deviated to left, high up. Turbinates pale, swollen. Treatment: Acid ash food. One suprarenal concentrate 2 gr. capsule t.i.d. Sept. 16, improvement in symptoms. Sept. 20, almost comfortable. Only sneezes in A. M. Oct. 5, slight recurrence. Dilute HCL gtt. x added, giving complete relief.

Case 30: Oct. 10, 1934: Female, age 55 years. History: Dizzy with stuffy ear for 14 years. Has been treated with Eustachian bougies at intervals all the time. Hay fever in spring. Examination: Mucous membrane — 2, pale. Right middle turbinate has been resected. Membrane tympani retracted. Treatment: Inflation of ears. Dilute HCL gtt. xx, increasing one drop daily until 50 is reached. Acid ash diet. Results: Great improvement. July 17, 1935, one suprarenal concentrate 2 gr. capsule t.i.d. added. Oct. 1, never has dizziness or stuffy ears. Sleeps all night and feels like a new woman.

From a group of 50 medical men scattered over the country with interest in one subject, such as body chemistry rep-

resents, it is possible to receive many case reports. From all these, the 30 presented have been selected. At this time I wish to acknowledge my indebtedness to Dr. L. W. Greene of Denver, Colo.; Dr. Harry L. Parker, of Lockport, N. Y.; Dr. E. W. Rucker, Jr., of Birmingham, Ala.; Dr. F. B. Blackmar, of Columbus, Ga., for case reports used.

SUMMARY.

1. Suprarenal concentrate is of value in treating edema of unknown etiology, urticaria, angioneurotic edema and hay fever.

2. Dilute hydrochloric acid and suprarenal concentrate from the clinical evidence accumulated appear to be synergistic in their action.

THE RELATIONSHIP OF SINUS DISEASES TO THE DISEASES OF THE EYE WITH REVIEW OF 52 CASES.*

DR. M. MARTYN KAFKA, Brooklyn.

The anatomical relationship of the orbit to the sinuses is so close that when one views this connection, it is not very difficult to see that disease from one region may entirely affect the other.

The close bearing of the vessels and the sinuses shows that there might arise during active stages of diseases of the sinuses the following: Orbital periostosis and cellulitis, exophthalmus, paresis or paralysis of the ocular muscles (which may be extrinsic or intrinsic in its nature); there may be reduction in the acuteness of vision, changes in the fields of vision as scotomata, and increase in the size of the blind spot, optic neuritis, neuroretinitis, retrobulbar neuritis and atrophy of the optic nerve.

If you will remember, the accessory sinuses of the nose, frontal, ethmoid and sphenoid sinuses and the maxillary sinus appear to be supported from the orbit only by thin plates of bone. The cavities might become obstructed and the mucopurulent material accumulates and may cause pressure on various parts around the orbit. Most commonly found disease is in the frontal, next is the ethmoid and the sphenoids. Due to erosion of the walls of the sinus, the accumulative purulent material may extend under the periosteum which may cause bulging under the posterior part of the orbit. In this manner the purulent material might migrate toward the orbit into the skin, forming a sinus, or even into the cranial cavity; thus orbital cellulitis may be created. There might be ethmoidal cells distended from accumulated growths of polypi, new growths or inflammatory products which may bulge into the orbit, thus displacing the globe, which in turn will produce diplopia, chemosis, venous engorgement and ptosis. Where there is ethmoiditis present and occlusion of the discharge,

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orbital cellulitis may supervene and if the ethmoiditis is mild, retrobulbar neuritis may set in.

Some ophthalmologists feel that operations on healthy paranasal sinuses are indicated in retrobulbar neuritis. In many cases such procedures have been very successful, and the reason for the improvement in such instances is due to good drainage of the secretions from sinus areas.

There are several possible pathways by which an attack of paranasal sinuses may invade other adjacent tissue structures.

In children, anatomical and embryological changes may occur. Infections may start, not only through injuries of various types to the head, but also there may be dehiscences which may be of a congenital type and as a result there may be involvement of the cranium — found usually at the ethmomaxillary suture or openings in the bony wall of lamina papyracea or orbital wall of the maxilla.

Some authorities state that infections may travel by perineural sheaths, but this manner of extension must be further demonstrated before it can be adequately accepted. There is, however, no direct connection between peripheral parts and the intradural structures.

One of the gravest situations confronting the ophthalmologist is the possible extension to the meninges and brain. In this instance the superior and inferior ophthalmic veins enter the cavernous sinus in front and the superior and the inferior petrosal sinus leave it behind.

Anatomical basic facts disprove spread by lymphatics.

Clinical Description: Frontal Sinus: *a.* Unilateral swelling of upper lid is usually characteristic of frontal infection (ordinarily in children past 5 years of age); *b.* a swollen lower lid is a common occurrence with ethmoid cell disease, or even both lids may be swollen in a combined involvement.

The lids become infiltrated (periorbital and orbital cellulitis) and sometimes infection may localize and form abscess (orbital abscess) and may break down and create a fistulous tract.

Inflammation of similar nature may occur at frontal area and cheek and some inflammatory processes may cause thickening of the periosteum at medial wall of orbit, which even-

tuates in a red, extremely excruciating swelling near inner canthus of the eye.

There may be a high, low, or no temperature at all present and pain of involved area may be referred to other regions of the head.

The eyeball may be normal but may become proptosed and bulbar and palpebral conjunctivitis may be chematic. Motion of eye may be limited, which probably might be caused by external rectus paresis or impaired motion of extraocular muscles. When proptosis is great, lids do not close, hence ulcers may form on cornea. Papilloedema may occur in such types of patients.

In studying 10 cases of retrobulbar neuritis, on the service of Bellevue Hospital,[1] I found that all except four cases had pathology of one or all of the sinuses. In this group of 10 cases the following data was obtained: Three were male and seven female; patients' ages ranged from 13 to 62 years.

In going over the history of these patients, the onset of this disease in seven was gradual, and over a period of several months two had a sudden onset, and in one the disturbance took place over a period of three weeks. The most significant study in this group was related to the sinus disease. In one case there was pathology of both maxillary sinuses (hypertrophic mucosa), in another case there was a parasinusitis, and the fourth instance, slight pathology of both antra. In the fifth instance there was hypertrophic mucosa in both antra. In the sixth patient there was hypertrophic mucosa of the right maxillary sinus and in both frontals. There was no pathology of the sinuses in four cases of this group on X-ray examination. Upon the discharge of these patients, four were improved and six were unimproved, and the reasons for the unimprovement ranged from the refusal of treatment of these patients and lack of cooperation on their part. Of those that were treated, one had a bilateral sphenoidectomy done; one patient had badly infected teeth in conjunction with the disease and was treated dentally; three cases improved without treatment. Judging from the study of these 10 cases from the service of New York University and Bellevue Hospital, the occurrence of this disease is not very common, since the number of admissions in the hospital over a period of a year in the Eye, Ear, Nose and Throat Depart-

ments is 4,170 and for five years averaged 20,850 cases. (The 10 cases of retrobulbar neuritis covers a series of admissions over a period of five years; that is, one case in 2,000.)

In spite of the fact that retrobulbar neuritis is very infrequent, one must always remember that careful analysis of the sinuses are of paramount importance under all circumstances. However, the teeth and other foci of infection must be carefully studied before definite conclusions are reached. In past years I have had three cases in my own practice which were definitely cases of optic neuritis clinically, and upon getting X-ray reports I found that the patients had involvement of the maxillary and ethmoid sinuses. A careful search was made for other possible foci of infection, but only in one instance were infected molars found. The teeth received therapy and the sinuses were treated conservatively by shrinkage and packings of silver preparations, resulting in the three patients making uneventful recoveries. I certainly feel that radical surgery should not be used unless all of the conservative measures have failed.

Causes: Acute retrobulbar neuritis is local and, generally, usually transmitted from the ethmoid and sphenoid sinuses, but there are other causes, such as hemorrhage, into the optic nerve sheath or orbit, fracture of the base of the skull involving optic foramen may likewise create similar symptoms. Pressure on the chiasma by hypertrophy or tumor of the pituitary body, or a mass on the frontal lobe may in the initial period cause symptomatology of a retrobulbar neuritis on one side. Multiple sclerosis, insular sclerosis, is one of the important usual causes other than the sinus disease.

As regards therapy, Dr. Stuart L. Craig[2] favored operative intervention on nasal sinuses in states of retrobulbar neuritis, since when operative procedures were used spectacular results were obtained.

Dr. Benedict[3] feels operations on sinuses in cases of retrobulbar neuritis are not indicated, since by placing a 2 per cent iodin solution on the nasal mucosa or by packing the nose two or three times per day with a mild silver protein and allowing packs to remain in place for three hours, recovery can ensue. Hypermia can be induced for a longer period and recently has been reported to be just as effective as operations on sinuses.

It has been observed that retrobulbar neuritis may be a sign of multiple sclerosis and so a careful neurologic examination is to be conducted long before intranasal surgery is attempted. A physical examination should always be performed and search made for remote foci of infection.

In treating these cases, it is important to obtain a scrupulous history concerning the initial onset and its relationship to visual interference. The patient informs the examiner that the loss of vision either was sudden and in some instances, gradual. It is an uncommon finding to have pain in retrobulbar neuritis. In certain types of retrobulbar neuritis a sudden recovery may take place, but usually this occurs in conditions of nicotine and alcoholic poisoning or in diseases of multiple sclerosis.

Dr. Martin Cohen[4] cites several cases where diseases of the sinuses are often associated with conditions of inflammatory exophthalmos. He quotes Birch-Hirschfeld, who reported 648 collected cases of orbital inflammation and out of that number 509 or 59.8 per cent of the patients showed sinus disease. Dr. Cohen also cites that the frontal sinuses were involved in 29.8 per cent, the maxillary in 21.8 per cent, the ethmoid in 20.5 per cent and the sphenoid in 6.4 per cent. More than one sinus was involved in most of these instances. Mortality statistics in this group were 12.7 per cent of the patients with retrobulbar inflammation, or 52 in the collected group of 648 cases, the causes of the mortality being as follows: Meningitis, abscess of the frontal lobe, thrombosis of the cavernous sinus, pneumonia and sepsis.

Where there are signs of ocular exophthalmos one finds this condition apparent, except in mild cases where the diseased state is caused by inflammatory processes of retrobulbar tissue. In this primary category, patients respond rapidly to appropriate treatment and patient has an uneventful recovery in apparently a few days. Where there are patients who have long-standing exophthalmos, one may find that although the nasal accessory sinuses are not the basic cause of the initial manifestation of the disease, there are, however, certain ophthalmological variations in the sinus area. Search elsewhere in the body reveals no other finding except diseased sinuses.

I reviewed 11 cases at the Brooklyn Jewish Hospital,[5] four of which were retrobulbar neuritis, three optic neuritis, the balance orbital abscess. In this group the ages ranged from 2 to 40 years, three were female and the balance male patients. The onset of five cases in this group was from two to four weeks. In three cases the onset was from a few months to two years, in remaining three cases no history of onset obtained. Five cases were discharged as improved, one patient had an exodus, one was unimproved, the results of four were unobtained. All of the cases in this classification had sinus involvement ranging from sphenoid, ethmoid and frontal sinuses.

Where the orbital abscesses were present, incision and drainage were established. In the cases of retrobulbar neuritis where sinus disease was found, ethmoidectomies and spenoidectomies were performed. In the instance where the patient died, a periorbital abscess was present and the etiology in this case was a fracture of the base of the skull with meningitis complicating. One case had acute frontal sinusitis, right frontal osteomyelitis, right frontal epidural abscess with a questionable brain abscess. After a ventriculogram was performed, an exploratory operation was done for a brain abscess and the finding proved to be a frontotemporal brain abscess with osteomyelitis of the skull. The orbital abscess was drained and a curettage of the skull was performed. This case improved but he had to be rehabilitated for very light work. In these 11 cases only three showed positive X-ray findings. In three cases tonsillectomies were performed besides the sinus surgery.

I reviewed 31 cases of abscess of the eyelids, either of the upper and the lower, or both lids, out of 2,625 eye cases admitted over a period of one year on the service of New York University and Bellevue Hospital,[6] and found out of these 31 cases with total admission of 13.125 cases for five-year service, there was one of this type of infection to every 423 cases in eye clinic admitted, and out of that number there were two cases of abscesses of the orbit and two abscesses of the lacrymal sac. One patient suffered from secondary glaucoma of the right eye and staphyloma of the left eye.

X-ray report of these 31 cases were as follows: In the case of secondary glaucoma and staphyloma, X-rays showed

a cloudiness of the medial cells of the frontal sinuses and a thickening of the mucosa of the lateral margins of the antra. In another case of the abscess of both lids there was a thickened mucosa of the right frontal and the left maxillary, but no destructive changes in either orbit. In another patient who had an abscess of both lids, there was a hypertrophic mucosa of the left ethmoid cells. Still in another patient suffering from abscess of the lid, there was pathology of the right antrum, right ethmoid and the right frontal, with thickened mucosa. In the fifth case of abscess of the lids there was no destructive changes of either orbit. Hypertrophic mucosa was present involving the frontal, ethmoid and maxillary sinus. The sphenoid sinuses were extremely rudimentary. In the sixth case of abscess of the lids there was a thickened mucosa of the frontal and left maxillary sinuses, but the sphenoids were normal. In the seventh in the same type of case the Roentgenological report showed slight pathology of the right maxillary sinus. Twenty-four cases showed negative X-ray reports as regards sinus disease involvement.

Concerning the treatment, the secondary glaucoma and staphyloma case were requested to return in one month for further observation. Twelve cases were incised and drained, seven cases were treated locally without operation and one case was treated through the nose. Wherever the diseases of the sinuses were present, conservative treatment was rendered. Besides the incision for the abscess of the lids, nine improved without any treatment other than local soothing therapy. All 31 cases which were treated recovered upon discharge. Abscess of the lids is more common in males than in females, being 23 in the male and eight in the female.

Dr. Friedenwald,[7] of Baltimore, feels that the effects of the diseases of the nasal accessory sinuses on the optic nerve have not been clearly established, and there are several authors who also feel its interconnection has not been definitely explained. In one instance DeGrosz[8] observed 100 cases of retrobulbar neuritis and found 50 out of 100 were caused by nasal conditions. Wilmer[9] recently reported eight cases of retrobulbar neuritis, one of which was attributed to sinus infection. Gifford[10a] in 1931 stated that four out of 13 cases of retrobulbar neuritis were due to diseases of the accessory nasal sinuses. He further reported that the condition of retrobulbar neuritis was caused by purulent sinusitis

in 3.5 per cent of cases, and Gifford[10] feels when there is retrobulbar neuritis associated with sinusitis, that the former is caused by direct extension from the sinus condition. In retrobulbar neuritis when the origin is from the ethmoid and sphenoid sinus disease, such pathologic state must be treated, invariably, by opening of the ethmoids and sphenoids for relief. Other means of fever therapy may be employed, such as the utilization of an air conditioned cabinet; also foreign protein injections have produced appreciable benefit in retrobulbar neuritic infections.

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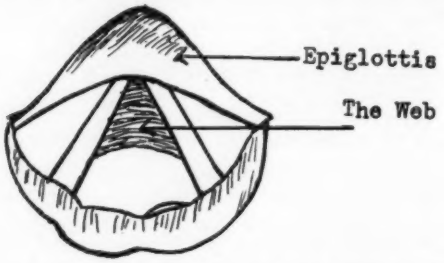
CONGENITAL GLOTTIC STENOSIS OR WEB OF THE LARYNX.*

DR. O. MAJZOUB, Beirut, Syria.

On looking over the literature regarding this condition I found only 20 such cases are on record[1] and two more cases were added by Emil Glas[2] and it has also been proved that these cases are congenital.

I have a case now on record who came to the out-patient clinic in the Department of Otolaryngology in the American University of Beirut.

Patient's history is as follows: M. I. B., of Sidon City, Lebanon, age 22 years, male, religion Moslem. On March 24, 1932, patient complained of hoarseness of voice since birth.



No sign of respiratory disturbances; patient is in good physical health; lungs normal. Blood Wassermann negative, and on examination of the larynx there is a web stretching across the anterior commissure from one cord to the other, translucent, and when the patient phonates the web relaxes and folds above the cords. The cords are also of normal color. The diagnosis was made as congenital web of the larynx.

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American University Hospital.

*From the Department of Otolaryngology of the American University of Beirut.

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SUBMUCOUS RESECTION IN RELATION TO NASAL PLASTIC SURGERY.

DR. MICHAEL M. WOLFE, Philadelphia.

It is a routine procedure in all cases of nasal plastic correction to make a thorough intranasal investigation. If the structures are found to closely approach normal, then the plastic correction is planned accordingly. However, in the vast majority of instances, we find abnormalities and pathology, which of necessity command our first consideration. Carter[1] informs us that 75 per cent of adults in the Caucasian race have deviated septums. Granted that this percentage is correct, other distinct pathological entities are also observed, but which will not be discussed at this time.

The submucous resection plays a vital role in nasal plastic surgery. When properly done, the nasal correction is not only simplified but concludes in a better physiologic result. Not being an otolaryngologist, it is rather presumptuous for me to enter into a discussion upon a moot topic. However, it appears to me that this operation is not only too frequently done by the inexperienced, but requires skill, patience and judgment as to what tissue should or should not be removed. In any event, regardless of the deformity, too much tissue should never be removed. *Conservatism*, with the thought in mind of a secondary nasal plastic, should be uppermost in the mind of the surgeon, remembering that neither bone or cartilage removed from the septum is ever replaced. Moreover, we know that practically the entire bony septum may be removed without any ill effects, but the same is not true with the cartilaginous portion. Sufficient amount of the latter must be left intact, both at the dorsum and the distal portion, especially posterior to the columella. Insufficient cartilaginous support, in reducing a hump nose, will result in a saddle deformity; while the removal of too much of the distal septal cartilage will produce a retraction of the columella (see Fig. 1) and so hamper the technique of the plastic correction.

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Recently I was consulted by a young opera singer with a prominent hook nose. Examination revealed the largest perforation I have ever seen. Strangely enough, she was not aware of this enormous perforation. Reluctantly, I informed her that a plastic correction was not only impossible, but that any attempt to reconstruct her nose would definitely result in a saddle deformity. As a safeguard, I always inform a patient of a perforation when present and have it corroborated by the physician, otherwise, I might be unwittingly blamed for its existence at some future date.

It is my custom when referring a patient to the rhinologist for submucous resection to explain or, rather, relate what is

Fig. 1. Retraction of the columella, following submucous resection.

to follow at the secondary correction. Conservation, especially wherein the cartilaginous septum is concerned, cannot be too strongly emphasized. The cartilaginous septum is rarely so thick as to produce obstruction of the nasal passages. In the majority of instances, the more acute angles may be easily removed at the point of the angulation, permitting the rest of the cartilage to remain intact. Nevertheless, we see many cases where almost the entire cartilaginous septum was removed instead of a small section of sufficient size to reduce the existing deformity. Another common observation is the protrusion of the septum through one of the nostrils. The rhinologist should therefore be skilled in the Metzenbaum

operation.[2] If the latter deformity is not too pronounced, shortening the nose at the time of the nasal plastic will efface this deviation, and the Metzenbaum operation may be omitted. A marked deviation of the cartilaginous septum alone without any tortuosities is rather simple. The cartilaginous septum is fractured from the bony septum at its junction and overcorrected for three or four days, either by adhesive strips externally or the Sefian head brace.

Contrary to the belief of some,[3] I believe with others[4] that the submucous resection should always be accomplished *first* before the nasal plastic for the following reasons:

Figs. 2 and 3. Nasal irregularities following submucous resection.

1. With the internal structures more anatomically correct, the plastic correction is more easily accomplished.

2. Moving the nasal bones mesially into their new position is not hampered by a tortuous septum, spur, or any other intranasal obstruction.

3. With a previously corrected intranasal operation, the normal function and anatomic relationship is maintained after the plastic correction.

4. If a slight saddling or a "caving in" of the nose does occur from the intranasal correction (and it frequently

happens) it can be corrected when the nasal plastic is accomplished.

5. A better cosmetic and physiologic result.

If the plastic correction is first accomplished, in the pres-

Figs. 4, 5, 6 and 7. Nasal irregularities following submucous resection.

ence of a tortuous or deviated septum, any or all of the following may happen:

1. Difficulty in moving the nasal bones mesially to the proper position on account of the tortuous bony septum.

2. Normal breathing is impaired.

3. Sinuses are not properly aerated.

4. With a narrowed nose, the submucous resection later becomes more difficult.

5. If "saddling" does occur, then another operation becomes necessary.

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NASHVILLE ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Meeting of April 19, 1937.

Report of Endoscopic Work for 1935 and 1936. Dr. Guy Maness.

A total of 66 cases of foreign bodies were observed, these being eight laryngeal, 28 tracheobronchial, and 30 esophageal cases. The laryngeal foreign bodies consisted in the following:

Large steel shaving (1), open safety pin (1), beef bone (1), fish bone (3), straight pin (1), and tin whistle (1).

The tracheobronchial foreign bodies were: Peanuts (4), beans (5), maize (6), piece of apple (1), peanut shell (1), burr (1), piece of charcoal (1), celluloid pieces (2), cockle burr (1), persimmon seed (1), wire staple (1), salmon bone (1), open safety pins (2), and chocolate covered peanut candy (1).

The esophageal foreign bodies were: Half dollar (1), nickle (2), button (1), chicken bones (4), beef bones (6), rabbit bones (2), fish bone (1), meat (4), open safety pins (4), bent wire hair pin (1), partial dental plate (1), piece of poker chip (1), green peach (1), and prune seed (1).

There was nothing unusual about the laryngeal cases except that the large steel shaving was rather deeply embedded in either side of the larynx just above the posterior commissure for 10 days in an infant, four months old. There was no complication following the removal of the foreign body.

There were a few of the tracheobronchial cases worthy of comment. One case was a girl, age two years, who was obviously dead when she reached the hospital. She was taken immediately to the operating room, a laryngoscope inserted and a bean removed from the glottis, but all efforts to resuscitate her failed. There was history of aspiration of the foreign body some five or six hours previously. What evidently happened was that the foreign body was aspirated into the trachea, but during a coughing paroxysm the bean became wedged in the glottis. Another case of a child, age 20 months, was brought in some eight hours after aspiration of some chocolate-covered peanut candy. The child was markedly cyanotic, cold, clammy and when reaching the operating room about three minutes later ceased breathing. A bronchoscope was immediately inserted, but no obstruction of the trachea or major bronchi was found. Artificial respiration failed to revive the patient. Careful search of the tracheobronchial tree after the patient expired revealed a moderate amount of sticky chocolate candy in the lower bronchi on either side but no peanut was found. The cause of death was apparently due to a severe tracheobronchitis, and it is doubtful if an earlier bronchoscopy would have been of any value, as it would have been almost impossible to have removed all of the candy. Another case was that of a boy, age six years, who had aspirated a peanut two weeks previously. When first seen he had marked subcutaneous emphysema involving neck, face, and extending down over the trunk to the lower abdomen. The foreign body, which was a piece of peanut in the left lower bronchus, was removed and the subcutaneous emphysema cleared up in a few days. The patient completely recovered after a rather stormy convalescence. There was a definite pulmonary emphysema which evidently was caused by a ball-valve obstruction. Practically all cases of

subcutaneous emphysema caused by bronchial foreign bodies occur with vegetal material, and occur following the production of an obstructive emphysema. The production of the subcutaneous emphysema presumably is caused by rupture of the alveola air sacs, the air entering the mediastinum by way of the hilus. Another interesting case was that of a girl, age 15 years, who had aspirated a celluloid imitation flower nine months previously and had developed chills and fever during the last month. A rapid recovery occurred following the removal of the foreign body.

Two esophageal cases were fatal. One case entered the hospital with a Ludwig's angina several days after the lodgment of a rib bone of a chicken in the esophagus. The bone was removed from the level of the suprasternal notch. The bone was crosswise and it was evident that it had perforated the esophageal wall on either side. The infection in the neck was then drained by wide external incisions, but the patient died from mediastinitis. The other case was that of a woman who had supposedly got a rib of a guinea fowl lodged in the esophagus. An esophagoscopy was done and no bone was found, but she developed a mediastinitis and pneumothorax the following day and expired within 48 hours. This case probably had a perforation of the esophagus by overriding a sharp bone with the esophagoscope.

In addition to the foreign body cases, a large number of diagnostic, therapeutic, and operative endoscopic prodecures were carried out. The following cases of laryngeal tumors were removed through the direct laryngoscope under local or no anesthesia: Papillomata (8), fibroma (1), angioendothelioma (1), and congenital embryonal cyst (1). Five cases of carcinoma of the larynx were seen. Two cases were obviously extrinsic when seen. One case where the lesion was subglottic was treated elsewhere with X-ray therapy. Two laryngectomies were done. Eight cases of carcinoma of the bronchus, two of bronchial stricture, and one of a tumor that was apparently a benign growth, were bronchoscoped.

The following esophageal cases were esophagoscoped: Cardiospasm (15), carcinoma (8), stricture due to caustics (4), syphilis (1), peptic ulcer of esophagus (1), esophagobronchial fistula (1), and congenitally shortened esophagus with herniation of stomach through the diaphragm (2).

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